THE 5S APPROACH TO IMPROVEMENT

100 Illustrated Before & After Examples

Using serial fixed-position photography to record the implementation of shopfloor improvements

•

Identify shopfloor problem areas

•

Monitor improvements as implemented

•

Focus on pervasive problems

•

Analyze the essential elements of the process

•

100 illustrated case examples

◆

Tomoo Sugiyama

THE 5S APPROACH TO IMPROVEMENT
TSUGIYAMA

PHP

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100 Illustrated Before & After Examples

Tomoo Sugiyama

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Preface

MORE THAN HALF A century has passed since I first joined Nippon Gakki Seizo KK (now Yamaha Corporation) in 1935. Since then, I have had plenty of time to gain firsthand experience of the way factories work. Over the years I have also benefited from strict guidance, and I've used this as the basis for ongoing efforts of my own. Moreover, throughout my time with Nippon Gakki, I have been aware of the importance of the 5S method which stresses: *Seiri* (clearing up), *Seiton* (organizing), *Seiso* (cleaning), *Seiketsu* (systematic cleanliness or standardizing) and *Shitsuke* (training and discipline).

In the early days, the term 5S was not used, with everything revolving around the two basic concepts of clearing things up and organizing the work area. It was not long, however, before the concepts of cleaning and systematic cleanliness were added, producing a 4S approach. Finally and, in fact, only comparatively recently, the concept of training and discipline was added to produce the final 5S idea.

When I look back on my working environment and think of how important the 5S concepts were, not only for the workers on the shop floor but for me as well, I cannot help but reflect on the rather inept way we tended to ignore the very essence of 5S—the need to educate workers to understand its importance and relevance. Instead, there was a tendency to use company pressure to get workers to conform to our requirements in this respect. It's no wonder our workers got the feeling they were being forced to comply, and it's hardly surprising that we failed to get the results we wanted through our application of the 5S approach.

It is my firm belief that as long as companies exist, so will the need for the 5S. After giving much thought to ways in which we could breathe new life into the actual practice of 5S, we came up with the idea of fixed-position photographic records. I originally thought of the approach while working with Yamaha Motor Co., Ltd., but finally put it into practice after I left to take up an appointment as adviser to a number of affiliated plants. Thus it is only quite recently that this approach has begun to be used in earnest. References to this practice in trade papers, magazines, seminars and in my own books, coupled with a growing number of requests from companies for further information, are helping to bring the approach to the attention of a wider audience.

The Japan Management Association has also come up with an idea to help promote wider use of the technique. With the help of a number of companies that have already started using the fixed-position photographic approach, the association has prepared a series of educational videos. These are known collectively as the "Fixed-Position Photographic Series," and they went on sale at the end of 1990. This short history shows that this approach has now earned its place in the rank of techniques accepted for general use in this field.

People often tell me that they use photographs as part of their 5S improvement activities, and there are certainly a number of good reasons for doing this, reasons which also partially account for the motivation to adopt the "fixed-position photographic approach." I will discuss these reasons in some depth during the course of this book. But I think the reader will discover, as I have, that the method is much more powerful than one could have anticipated. As I examined the photo records made by the companies using this approach, I was constantly amazed at their effectiveness in producing improvements.

As I toured factories and plants that made significant improvements in 5S, I found that many had not kept very good records prior to engaging in 5S activities. But the lack of proper records is one point you don't have to worry about with this technique. This is because the approach really comes into its own only when the photos are of something which you would rather others did not see, regardless of whether or not such problems could be improved by subsequent application of the 5S technique. It is also generally useful to introduce examples of cases in which improvement has been successfully carried out. However, the real job most commonly lies in explaining just how such improvements have been achieved. When looking to correct shopfloor inadequacies, a photographic record provides the user with a powerful tool.

Another thought which has occurred to me is that a collection of photos illustrating the sorts of situations in which the technique has been used would be helpful to those who are in the middle of 5S-based improvement activities but are not sure what to do next. It is not intended that this photo collection provide a model for the practice of 5S-based improvements, but rather that it should provide a useful ref-

erence for those wishing to evaluate the progress of 5S, safety and other important in-plant improvement activities.

To collect photos for this book, my first thought was to contact all the companies who purchased the JMA's "Fixed-Position Photographic Series" of videos and also those who bought the record charts, to ask them to provide samples from their own photo collections. I am delighted to say the response was magnificent.

Unfortunately, the amount of space available is limited and it has been necessary to leave out some of the material I received. I should like, therefore, to offer my apologies for such omissions, and to express my deepest appreciation to all those who were kind enough to cooperate with me in the preparation of this project.

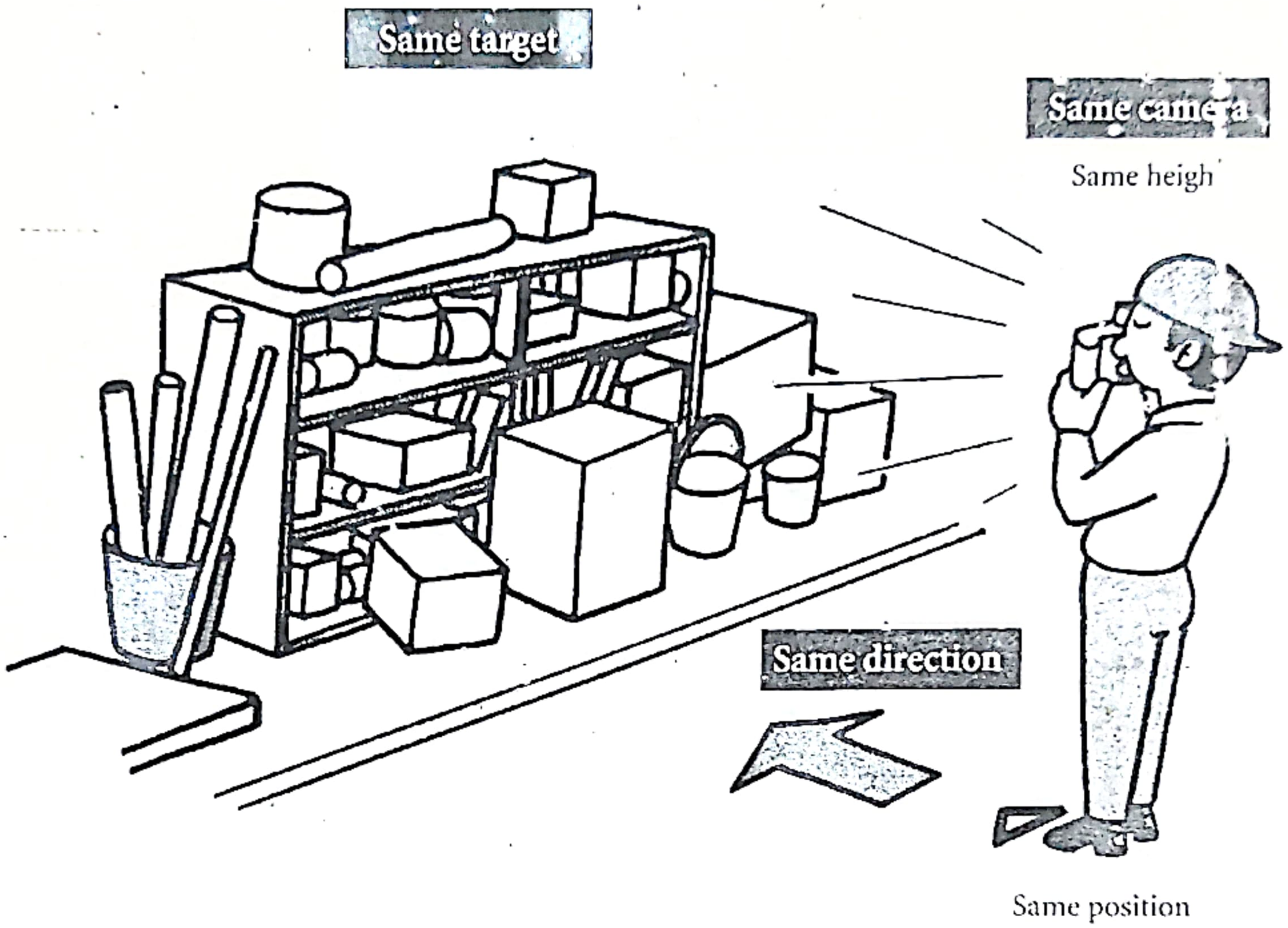
TOMOO SUGIYAMA

January 1992

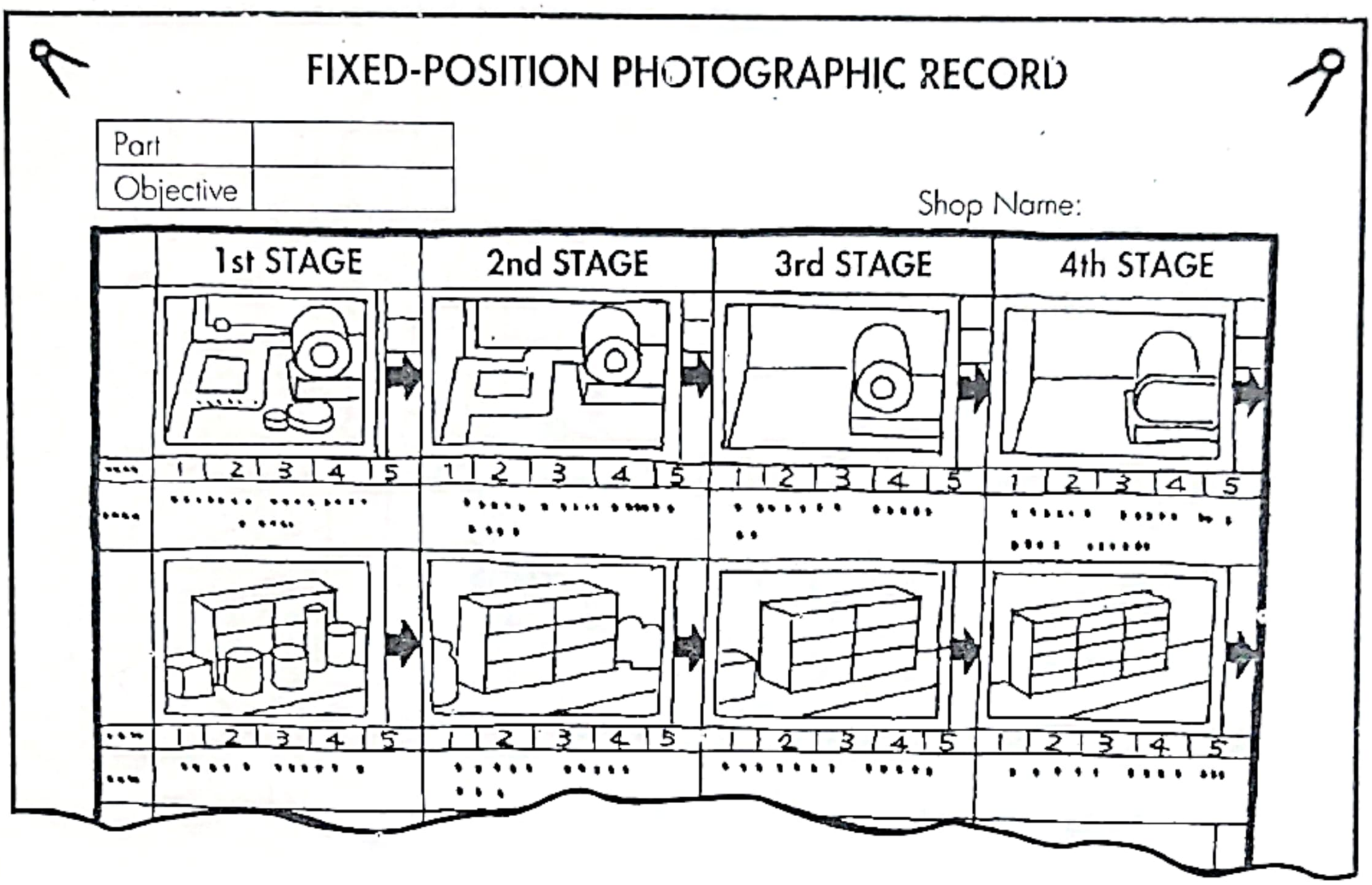
1

The Fixed-Position Photographic Approach

1. Fixed-position photography



2. Fixed-position photographic method



A FIXED-POSITION PHOTOGRAPHIC record of the sort shown in the figure can be used to:

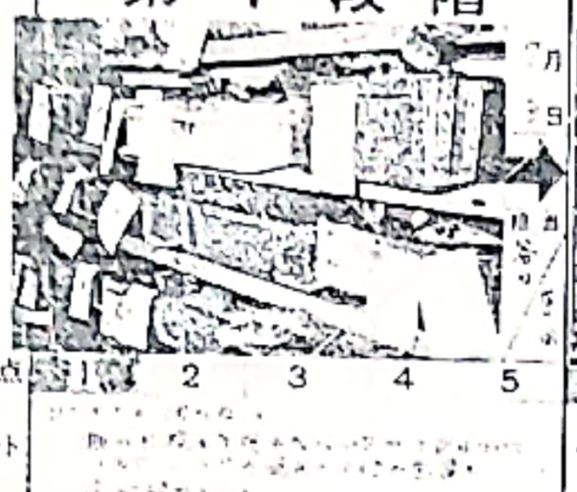
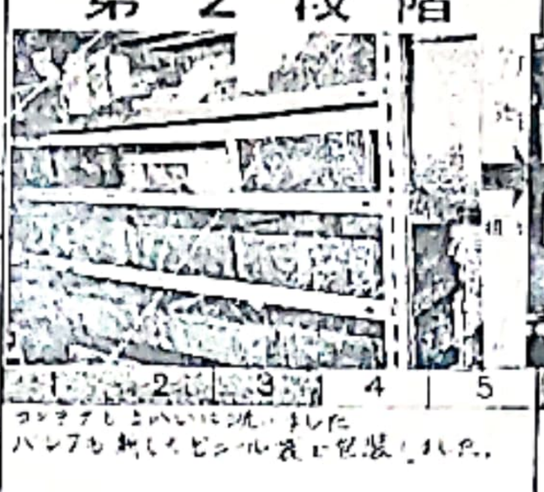
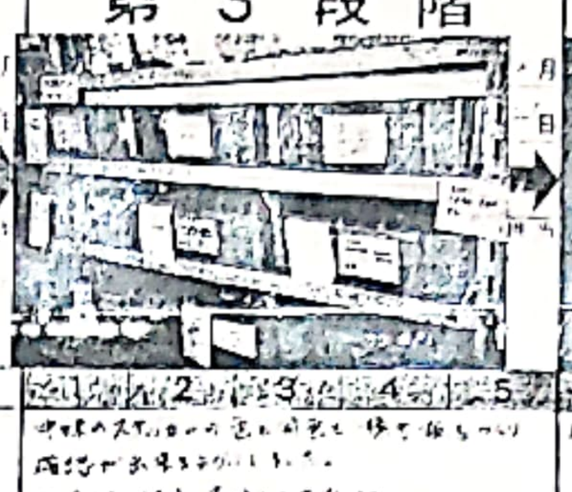
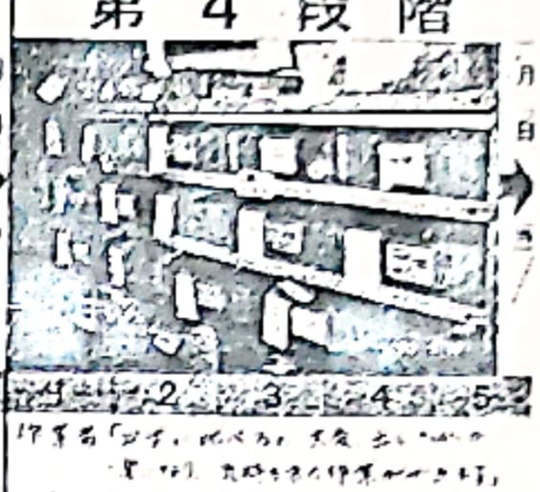
- identify the sorts of problems that currently exist
- point to ways in which the conditions might be changing
- produce a series of photographs taken over time
- produce a solid record pasted onto a backing board
- highlight the ways in which 5S and/or safety activities have been improved over time

This is the basis of the **fixed-position photographic approach**. It is useful, when fastening the recorded photos onto a board (*see* next page), to put peg holes through the top corners of the record to enable further examples to be placed over the top. This is a handy technique to use in meetings or when making a presentation of some sort.

PART 1
ねらい 現状を知る

定点撮影チャート

職場名 化粧品部 歩みサークル

経過 / 場所	第1段階	第2段階	第3段階	第4段階
				
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	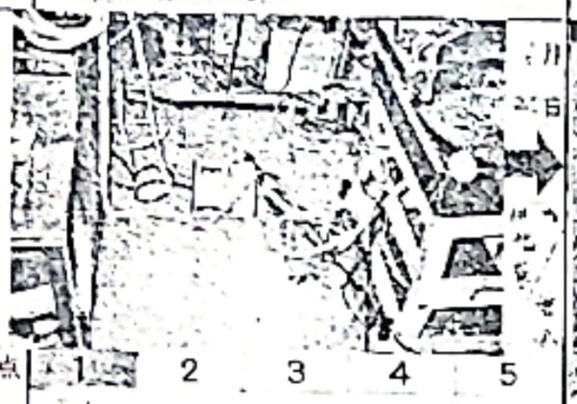		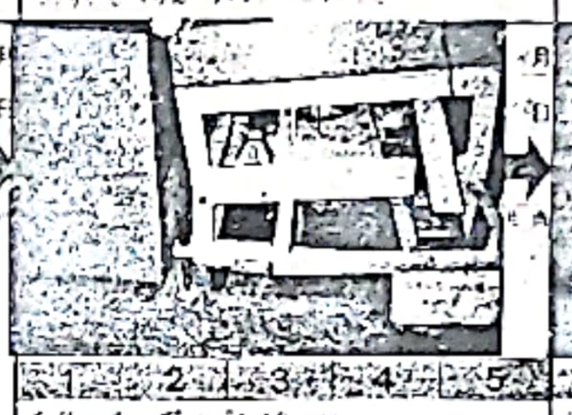	
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	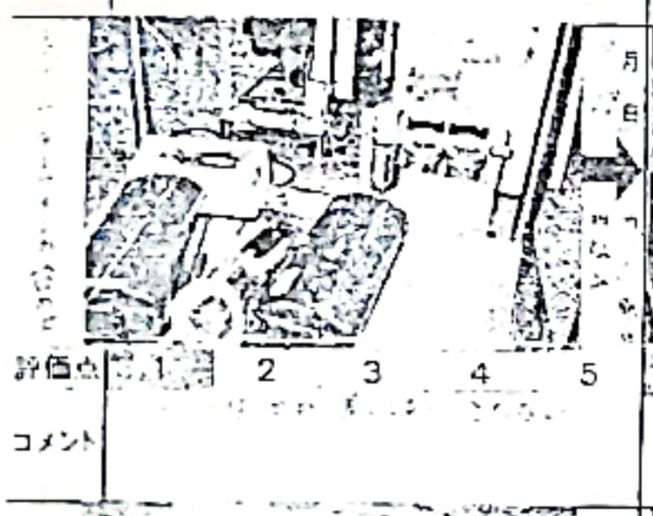	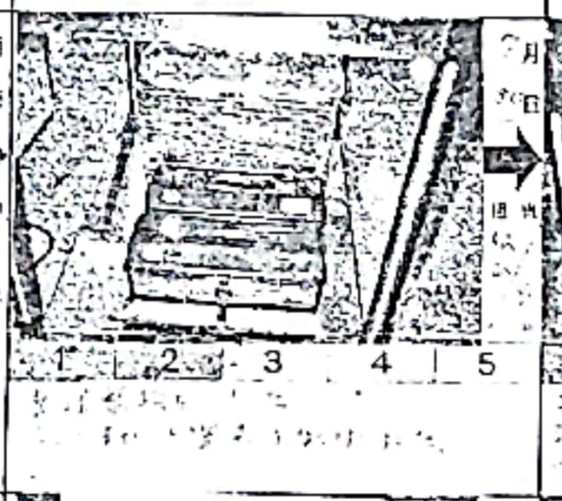	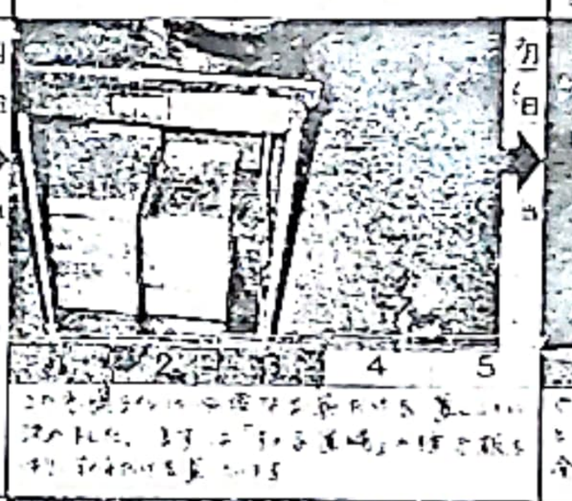	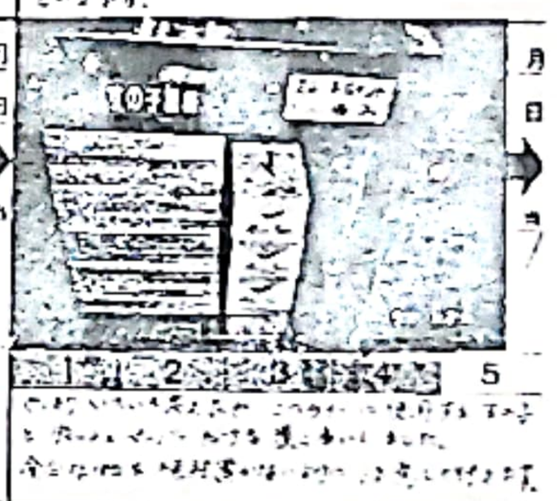
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	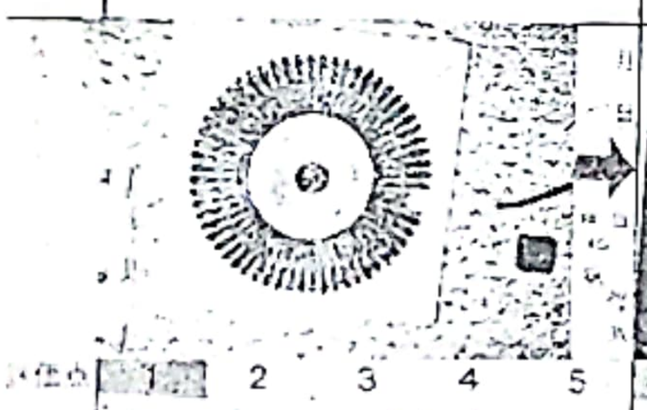	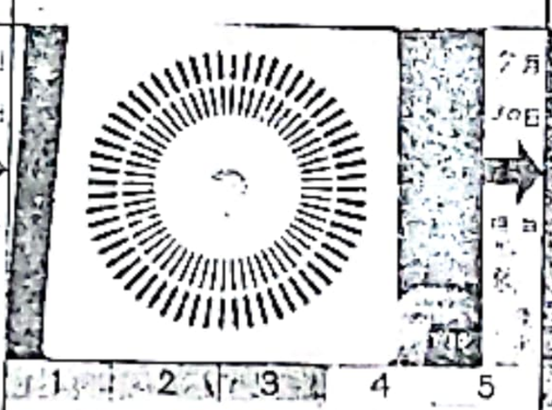	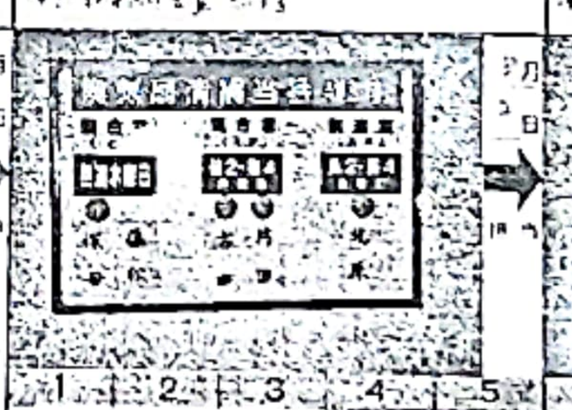	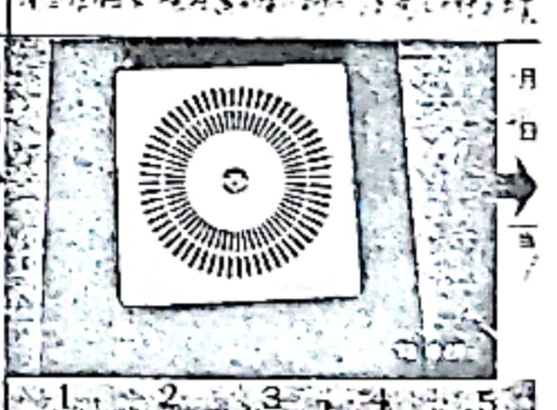
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	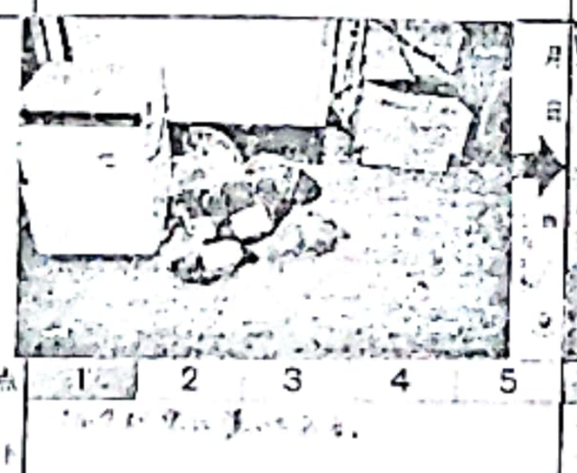	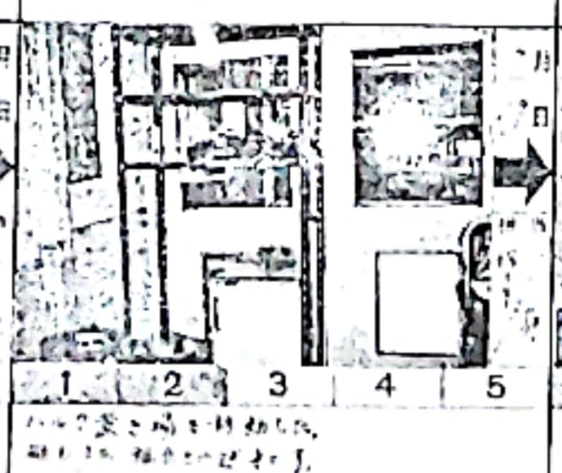	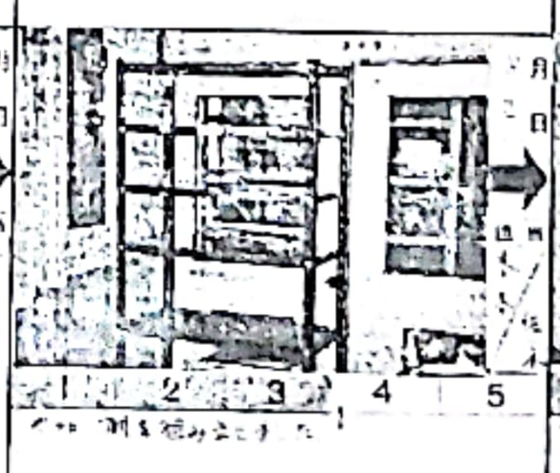	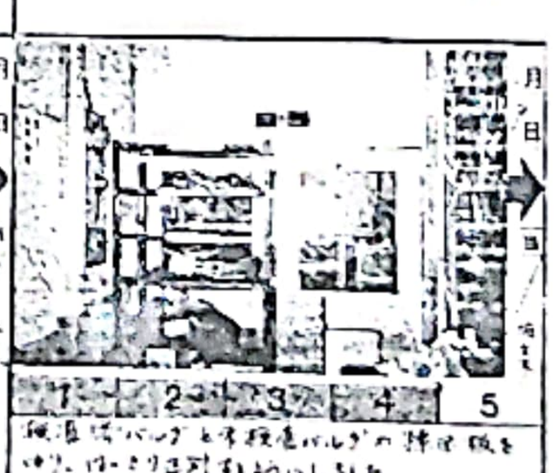
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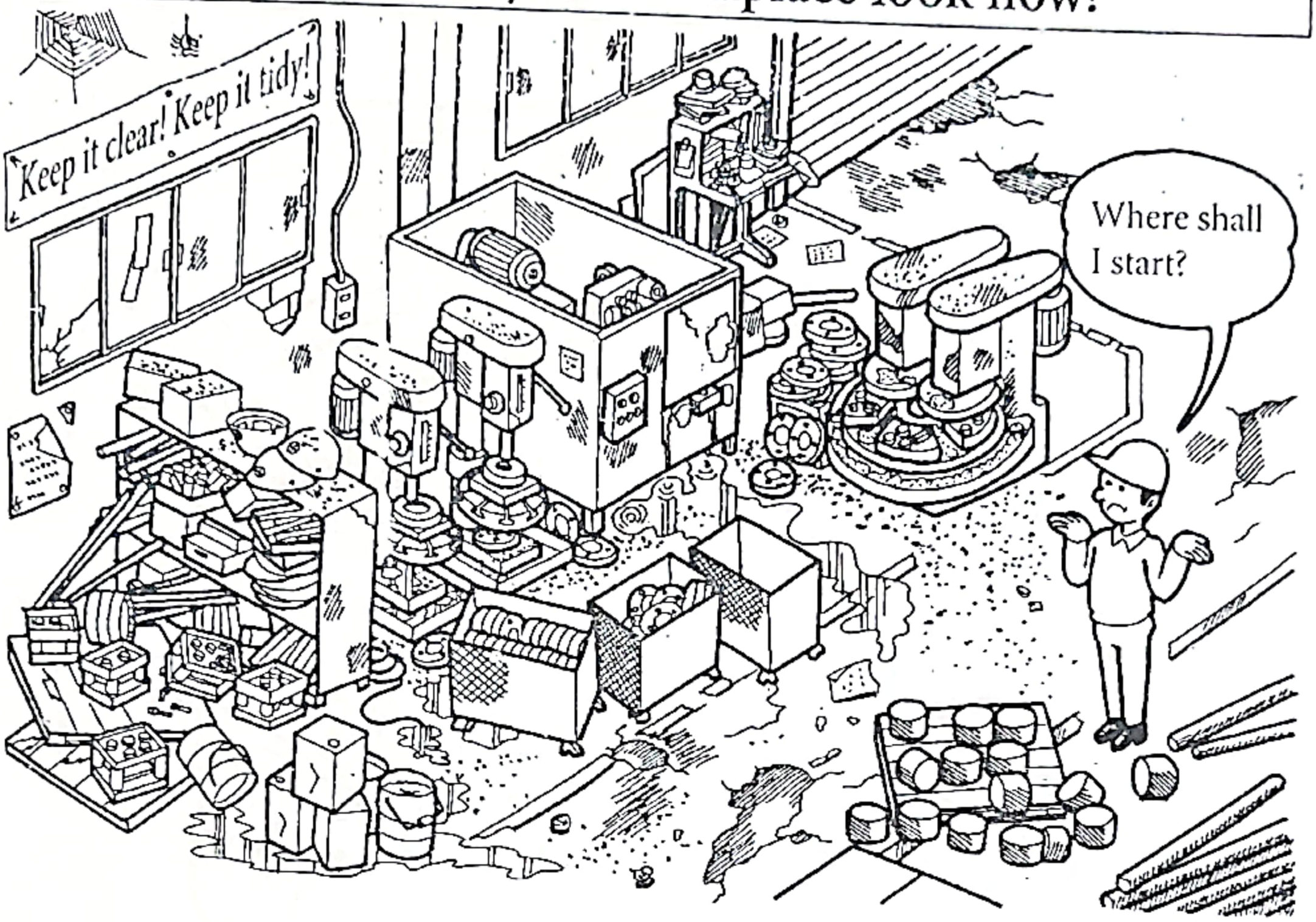
3. How does your workplace look now?



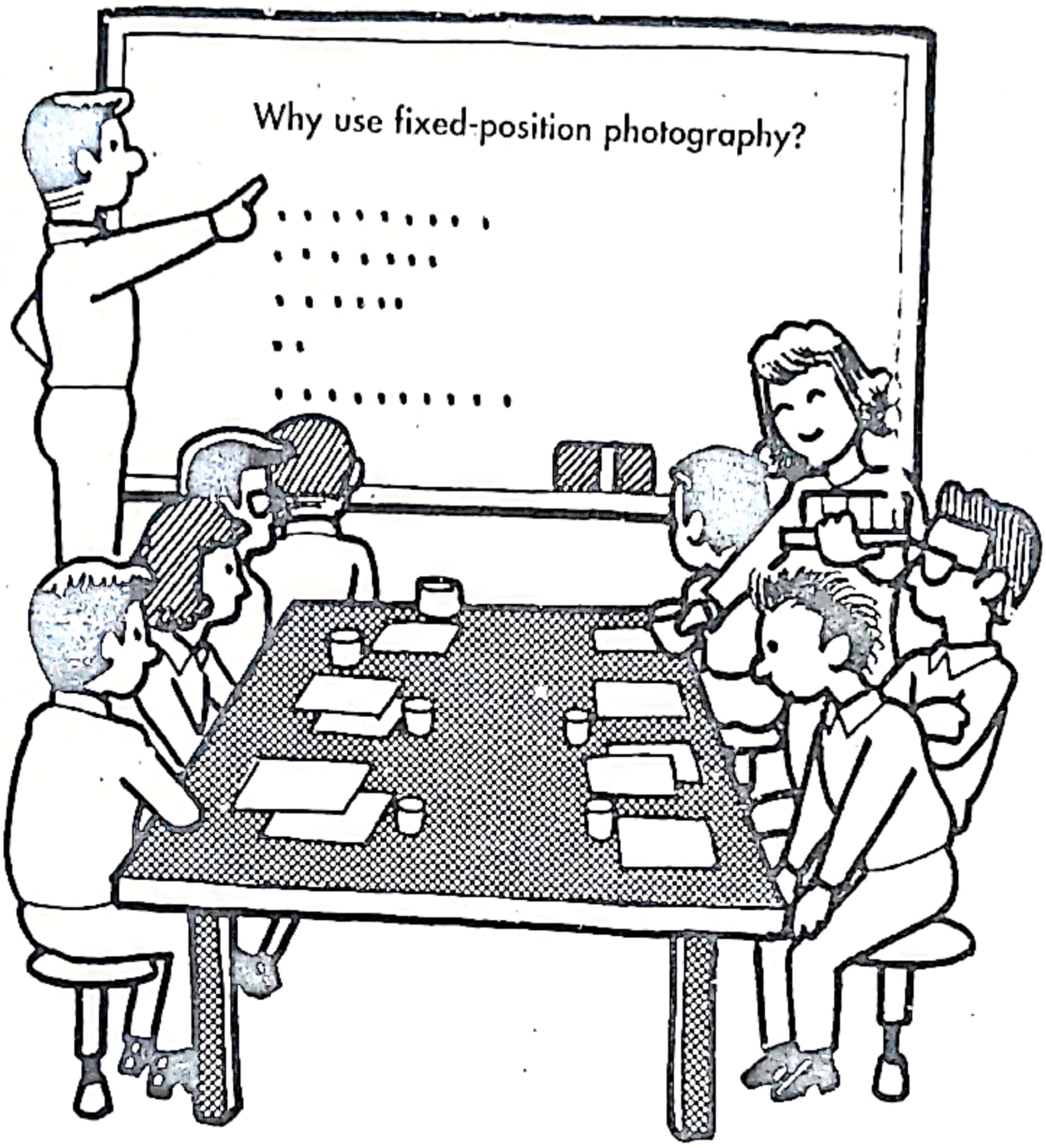
SO WHAT ARE THINGS like in your own workplace? I would guess that some, if not all, of the following complaints are heard with monotonous regularity:

- I spend so much time looking for things I can't get on with my work.
- Every time I want something I find I have to climb over other things to get to it. It's a real nuisance.
- The racks and storage shelves are a real mess, cluttered with all kinds of junk we don't need.
- The area round the machines is covered with so much sludge, you have to stand in it all day. It's dangerous too—a person could easily slip on that sludge.
- The machine leaks oil like a sieve. It takes a whole lot of cleaning and it's a waste of oil too.
- Frequent short work stoppages and machine breakdowns interfer with production.
- The machine puts out heaps of chips along with great globs of cutting oil—no sooner have you cleaned the work area then it's covered in oil and chips again.
- The workplace is quite small and the aisles are always getting blocked. It's really difficult sometimes to move things around the shop floor.
- What with things left jutting out into the aisles and even blocking them completely sometimes, it's hard to maintain the smooth flow of work around the plant.
- The racks and storage shelves are so full of gaps, it's difficult to know where to put things.

THE AVERAGE PERSON TENDS to look in the mirror from time to time and tries to put right whatever problems he or she might find there. In just the same way, the use of the photographic technique is very much like holding up a mirror to your own workplace to highlight those embarrassing bits you would prefer that others not see.

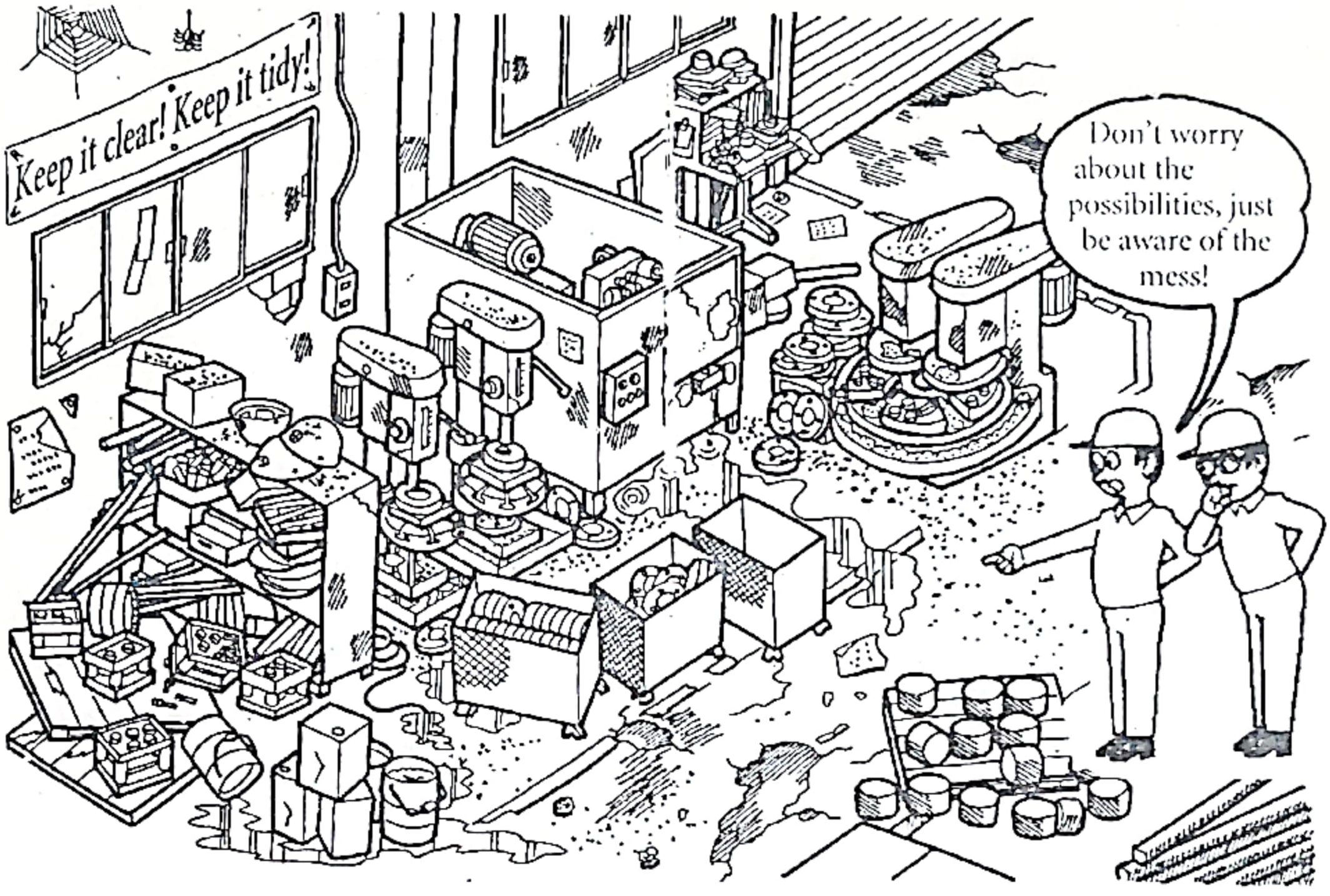
Instead of using a mirror, we use a camera to make us aware of what problems there are and what needs changing.

5. Preliminary meeting



THE SORTS OF PHOTOS that are useful in this approach are those which show the aspects of the workplace which we would rather no one else saw. Because of this, displaying these records in the workplace could easily create problems for the staff. It is important, therefore, to hold meetings first to explain to everyone what it is all about and to gain everyone's approval before the photos are actually taken. If you try to cut corners and scrap any of the preliminary meetings, you may well find the whole operation pointless.

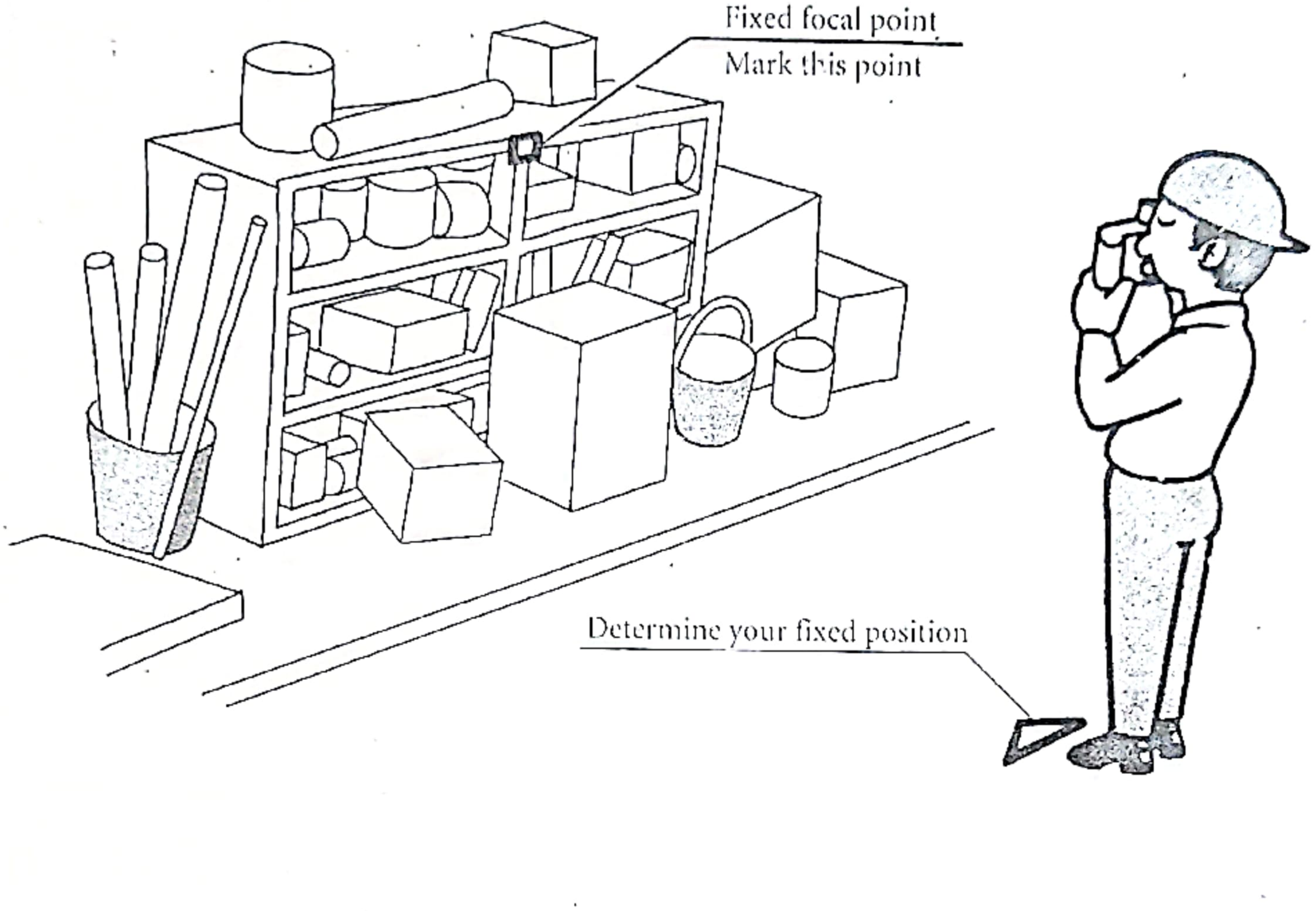
6. Decide on your target



THE PERFECT TARGET:

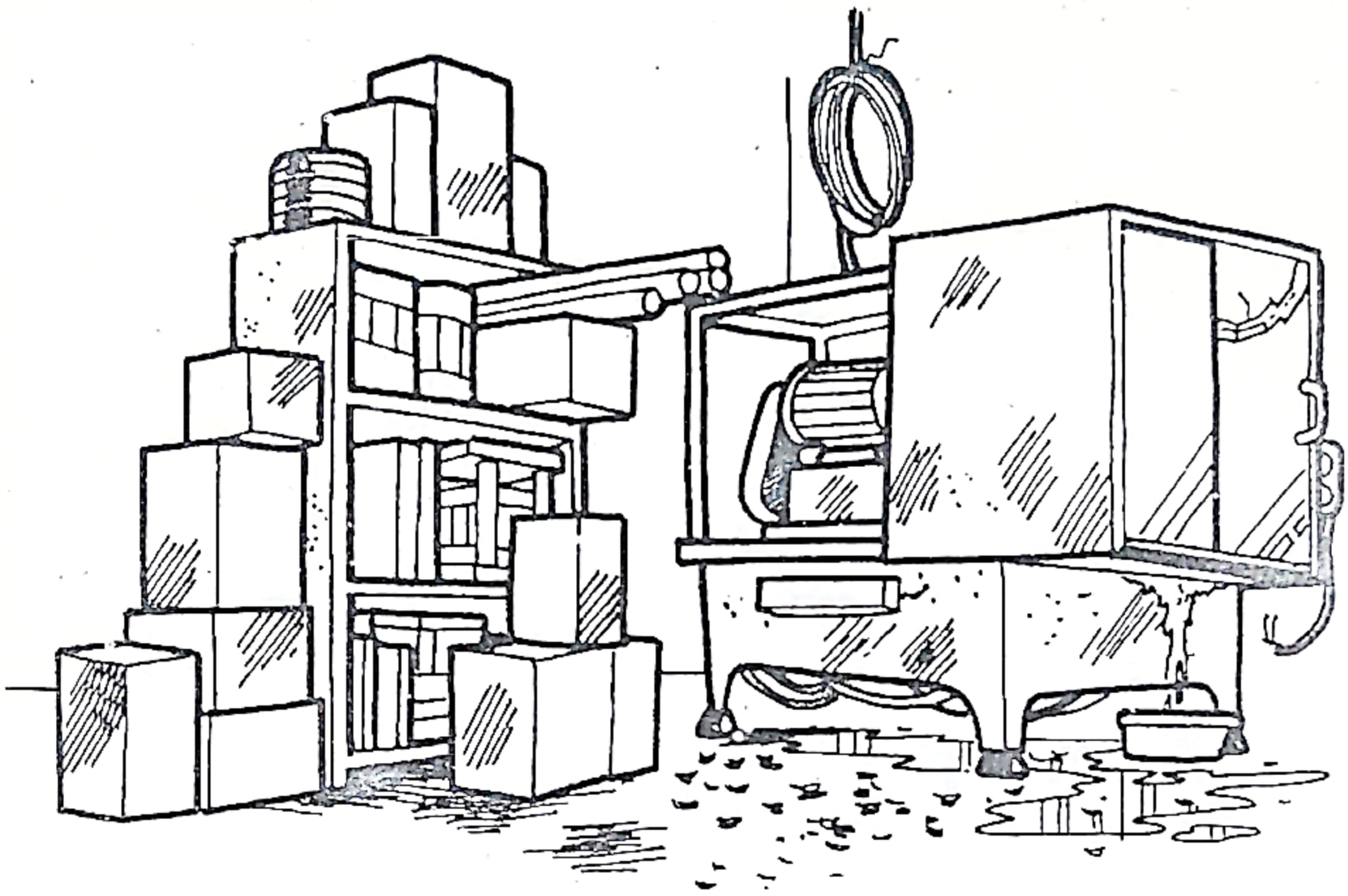
- things you would prefer others not see
- areas that have not been cleared away properly
- dirty areas
- areas that are not generally cleaned
- areas that are not easy to clean
- areas where grinding, drilling, etc., produce chips and oil splatter
- areas that look unsafe, etc.

7. Carry out fixed-position photography



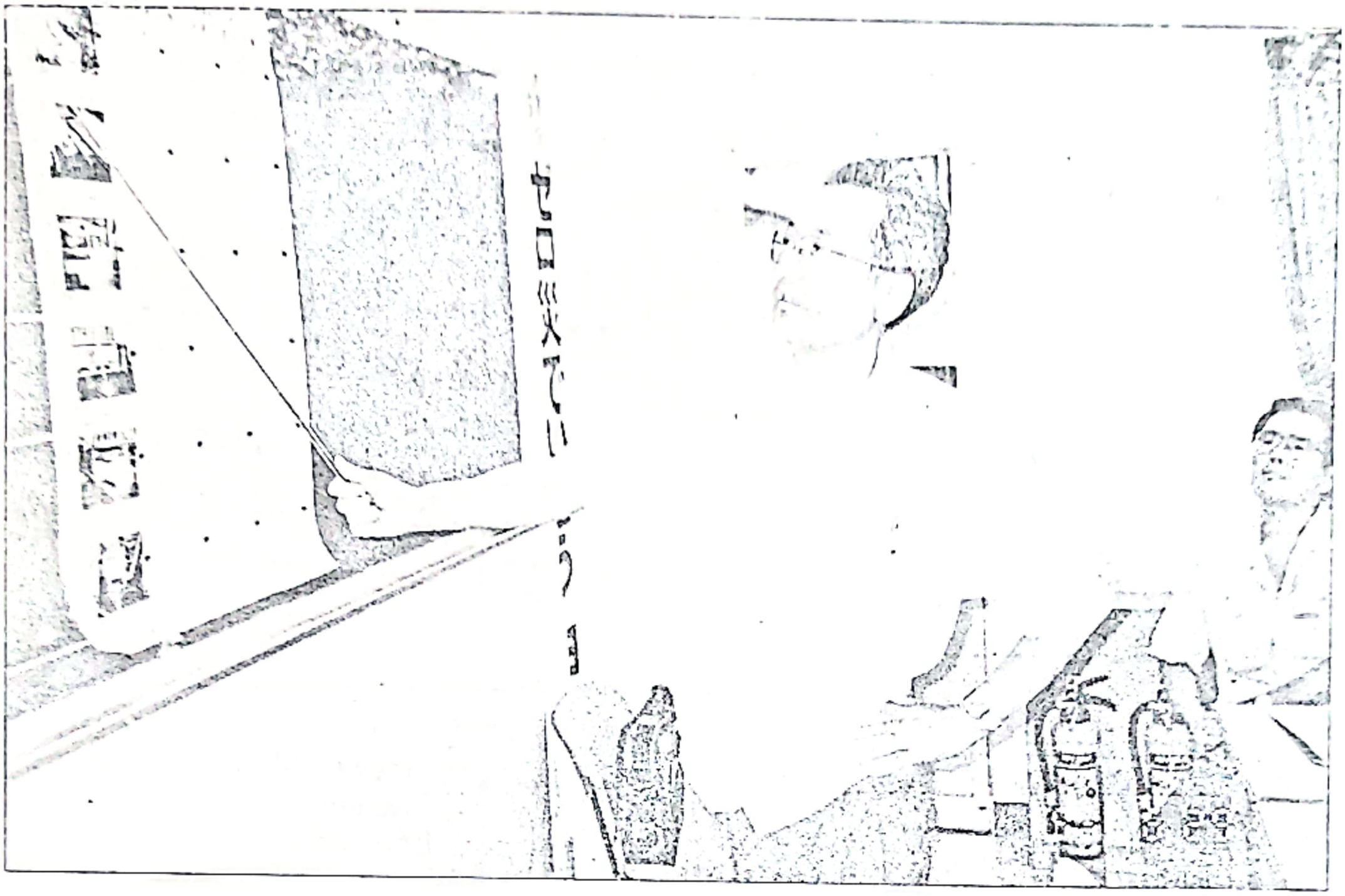
- Mark your fixed position and stand on the mark.
- Mark the central point of your selected target area.
- Photograph the target.

8. Focus on the target

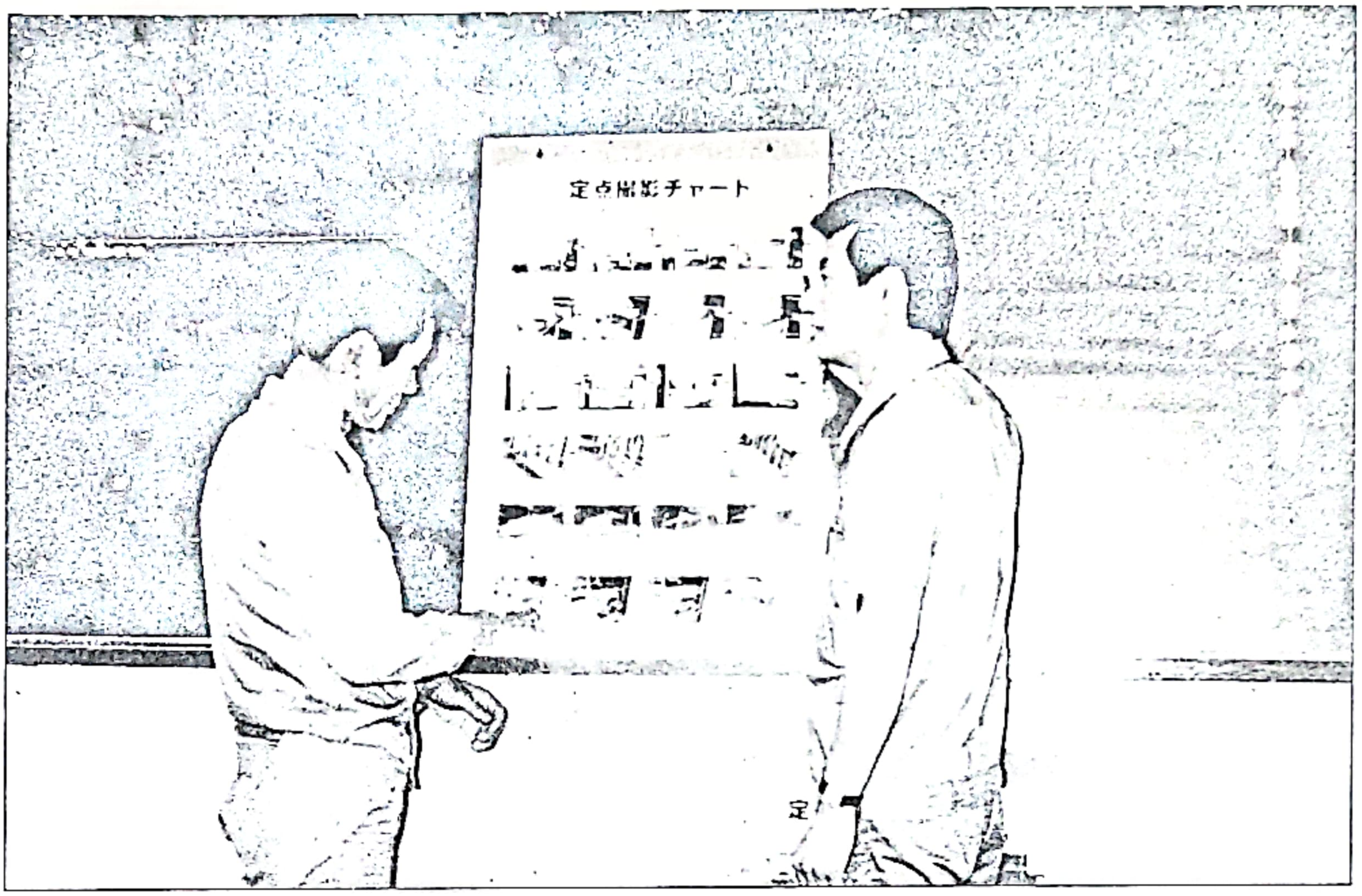


AVOID TAKING GENERAL SHOTS of the area you are interested in. Zoom in and focus your camera carefully and accurately on the target you have selected. By marking the central point of your target, you can ensure that all subsequent photographs are focused on the same point and this will make it easier to compare the series of photos.

9. Meet to discuss the record



HOLD A MEETING TO discuss the results, using the photo record as the focal point of the discussion. If each record is pasted to its own special board, it is possible to take the material to different meetings without damaging it in any way.



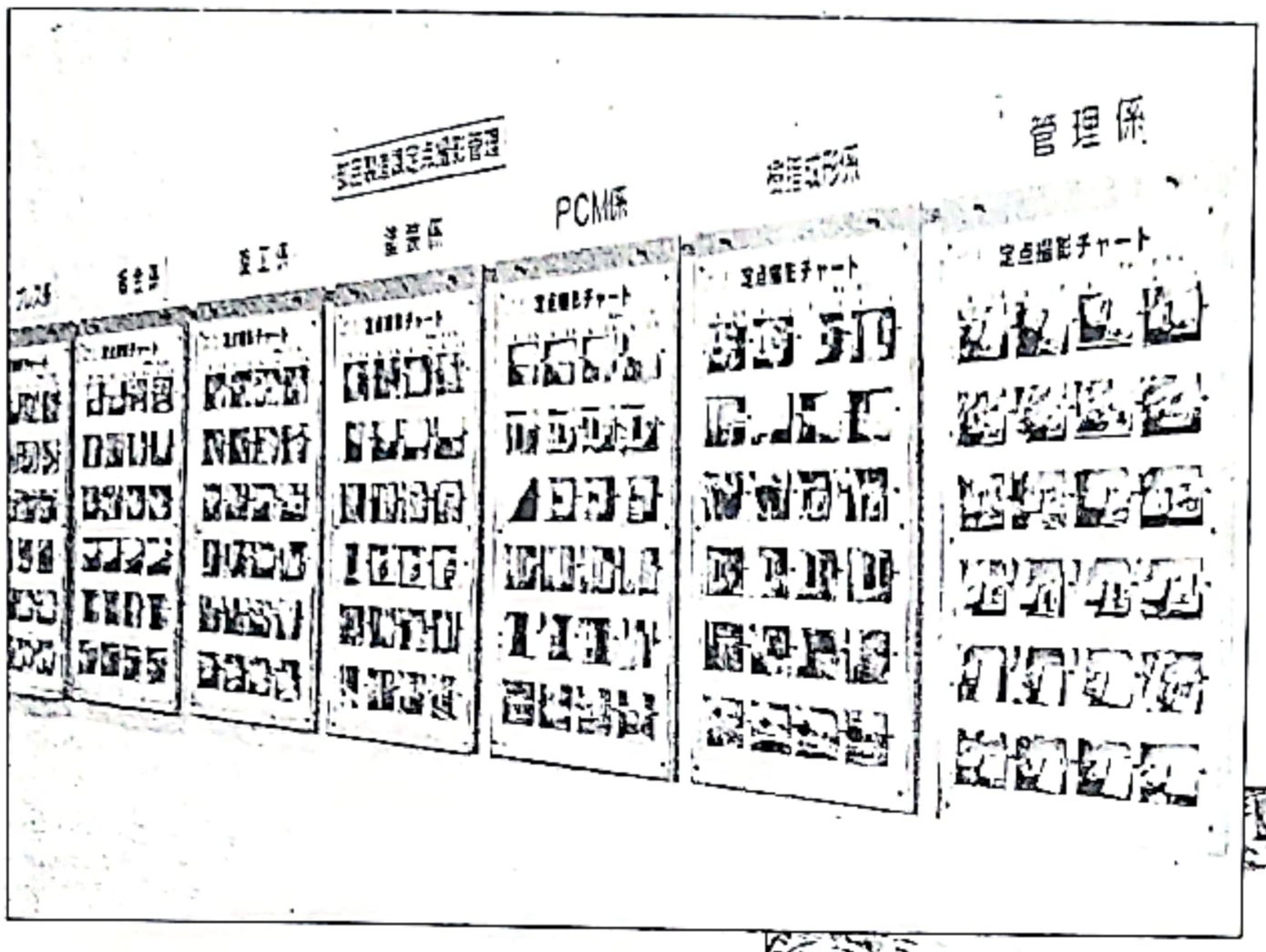
EVALUATE THE STATE OF the target work area and enter your figures in the evaluation column.

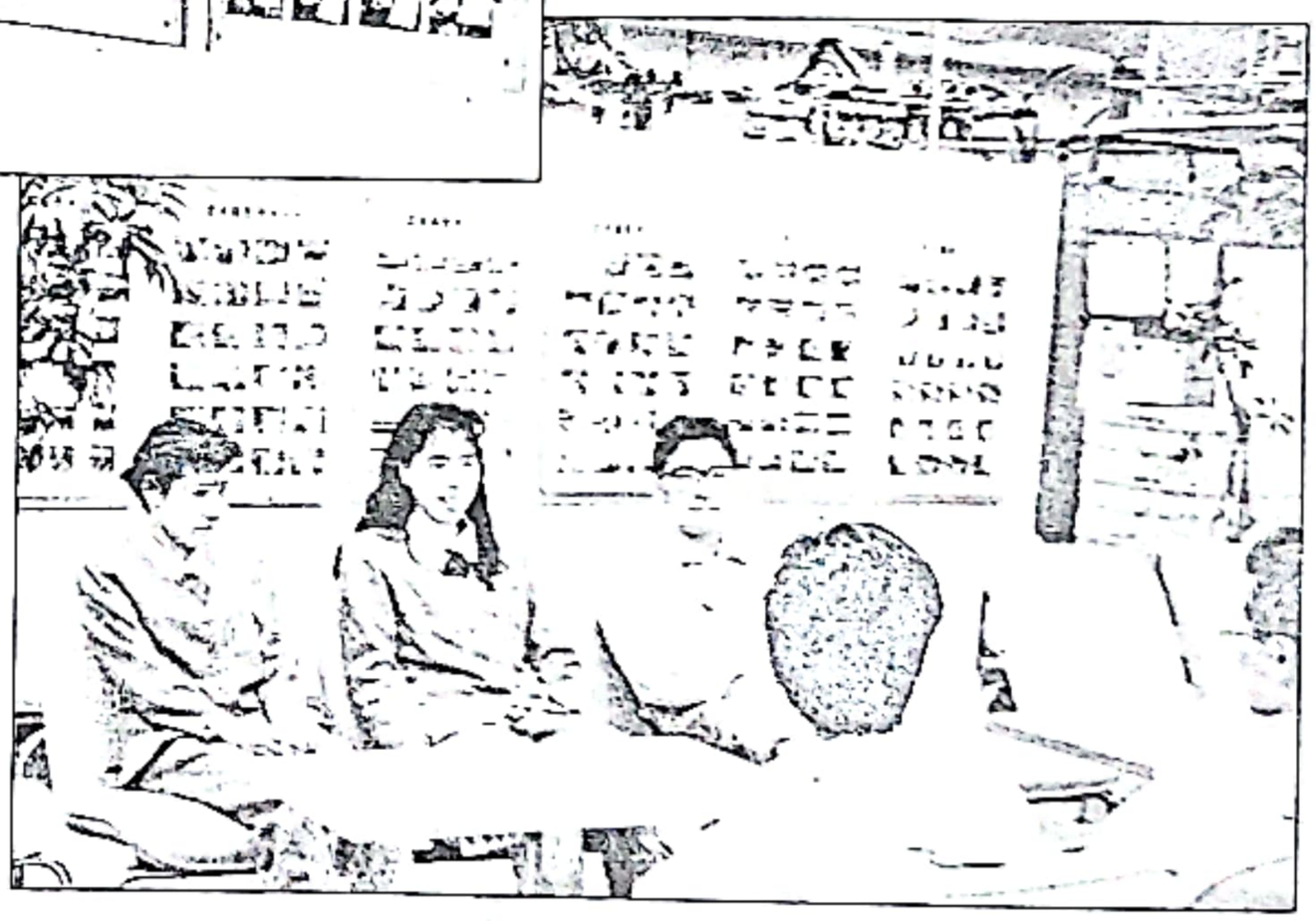
- The following evaluation suggestions may be useful:
  Point allocation:
  1: Chaotic
  2: Minor improvements only
  3: Fair amount of improvement—barely presentable
  4: Substantial improvement—only a little more needed
  5: More or less perfect
- Use different colors in the evaluation column: this makes the evaluation easier to read from a distance.
- Specify who is to take responsibility and set the date when the next photograph is to be taken.

Completing the remarks column:

- Enter the comments of the person who is to take responsibility, along with ideas for improvements to be made by next time.
- It is often a good idea to enter encouragement and advice from supervisory staff and committee members in this column too.

11. Display fixed-position photographic records





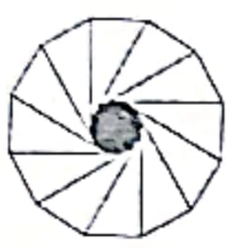
Photos on display in the front entrance of the Matsushita Electric Industries' Washing Machine Plant in Shizuoka

ONCE THE PHOTO RECORDS have been prepared, display them somewhere easily accessible to all the staff, such as

- a rest area
- visitors' aisle
- a meeting room

In particularly dirty areas, it is probably best to cover the photos with a transparent plastic cover or something similar.

The fact that the photos are hung where supervisory staff and people from other sections can also see them serves as an encouragement to those responsible for carrying out the improvements, while at the same time generating confidence among visitors.



2

Successful Fixed-Position Photography

1. Gain support from senior management

When trying to introduce a new technique, the project team will often need to make a great deal of effort to persuade top management of its value. It is hoped that this book will provide some help in this regard.

2. Clear up misunderstandings

Misunderstandings are common and may create the first obstacles to be overcome in many cases. Those involved in the variety of shopfloor improvement activities, such as TQC, TPM, TIE, campaigns for cleaner and more attractive plant facilities and safety enhancement, must be persuaded that the present technique is just one more tool and is not designed to undermine their efforts to date. We are not trying to suggest that the fixed-position photographic method should be used in place of any or all of the other techniques currentiy in use, nor that it is capable of solving all problems on its own.

3. Decide how to combine this technique with other improvement activities

It is important to specify precisely how the fixed-position photographic technique is to be used in relation to the company's overall operations.

- How is this approach to be fitted into the company's basic organizational structure?
- Should the approach be given a functional work group orientation?
- Should the approach be given a committee-centered orientation?
- Should the approach be introduced through the medium of small group activities?

It is, of course, important for company members to discuss their preferred approach in some depth before actually starting to use the technique. Experience suggests that the most effective way is to use a small group approach with the photography being directed by the group members themselves.

4. Prepare a display area

While the basic objective is not to advertise the merits of fixed-position photography as a technique, the success or failure of this approach is nevertheless heavily dependent on the choice of a suitable means of displaying the records. The manner of display will clearly reflect the company's enthusiasm or otherwise for this technique, affecting staff attitudes. An obviously enthusiastic attitude on the part of the company will also have a positive impact on the company's visitors.

5. Recognize effort and do so with enthusiasm

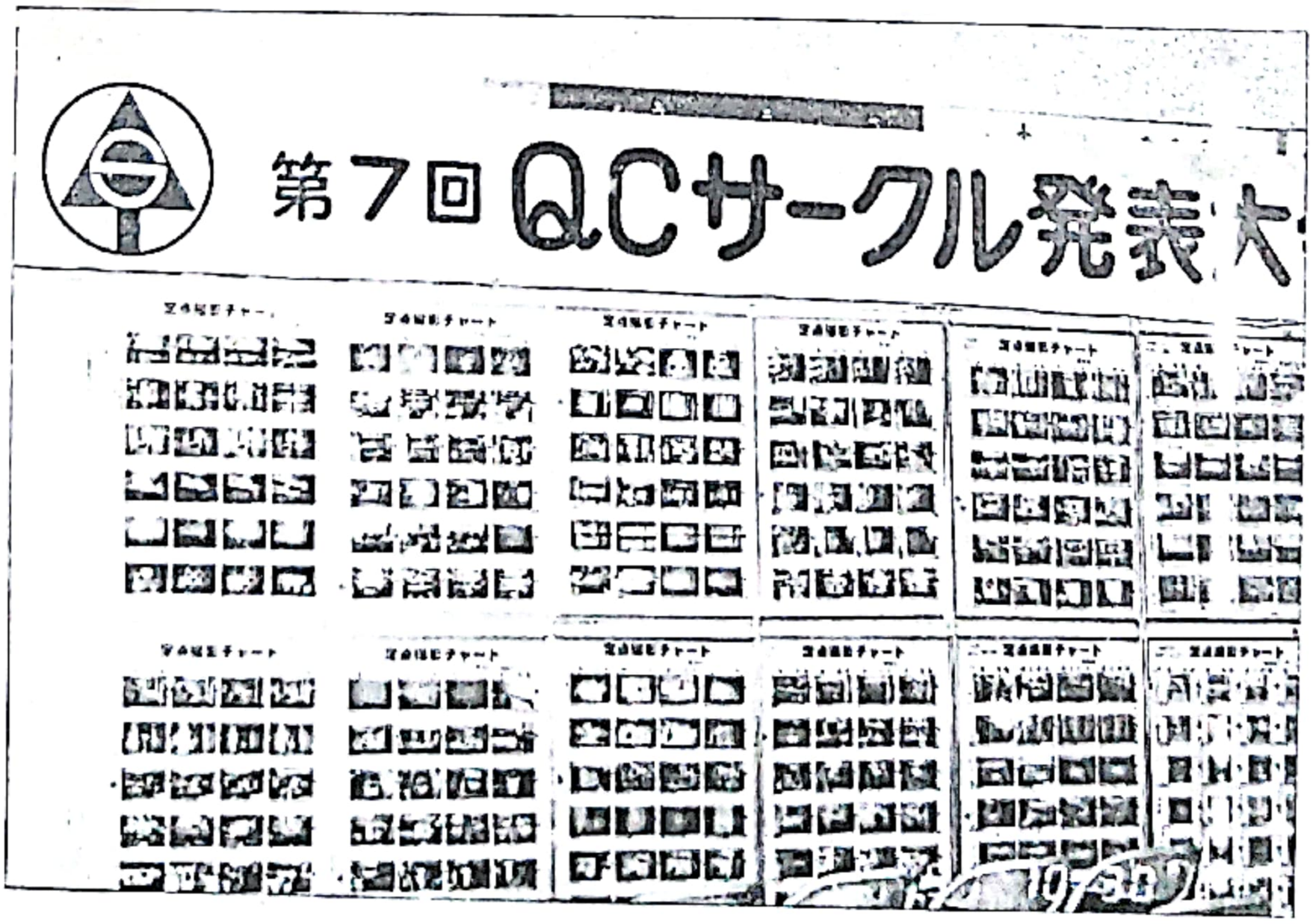
Those who have a way with people are those who know when to offer a word of appreciation. For this reason, it is important to establish a system to provide formal recognition for those who have made active use of the fixed-position photographic approach and who, in so doing, have achieved a measure of success with their other 5S and safety activities.

6. Supervisory staff must show interest

By entering advice or encouraging comments in the remarks columns on the photo records, supervisory staff and committee members can help create a very favorable impression among visitors concerning communications within the plant and/or company concerned.

7. Use the photos for a variety of activities

The photographs form an extremely important record of a plant's activities. It is particularly handy, therefore, if the negatives can be kept and subsequently sorted and ordered for use as appropriate visual aids when presenting or explaining other aspects of the plant's improvement activities (TPM, TQC, safety, small group improvement activities, etc.).



3

Advantages of Fixed-Position Photography

Advantages of the fixed-position photographic approach

- ease of introduction as an aid for use in 5S activity

- helps others understand clearly what your group is doing

- provides a clear visual record in the form of a time series illustrating the progress you have made, stimulating your group to greater efforts

- prepares the way for significant improvement by encouraging discussion of the results

1. Shopfloor comments from groups that have started to use the fixed-position photographic approach (Selection No. 1)

Company I

Impressions of the company's 5S drive

1. Our day-to-day attitude to the dirt around us has changed; you might say there has been a 180-degree shift in our thinking.
2. Our surroundings look much better now and we no longer have trouble finding the tools we want.
3. The plant's still dirty but at least it's better now than it was.
4. The company's altered out of all recognition since we set the small groups up.
5. We got storage shelves put in and that enabled us to clear up the mess on the floor. You wouldn't believe how much better the place looks now.
6. All in all, it's a massive improvement.
7. It might look like we've just cleared the place out and tidied it up a bit; the important thing to remember, though, is that we've not just shifted the mess somewhere else but created a radical improvement from the bottom up.
8. We seem to be making better use of the space available.
9. There's a basic feeling of cleanliness about the plant now.
10. We've started putting our tools and other equipment back in their proper places after use.
11. It's important to create an active awareness that the 5S activity you're engaged in is not just a one-off effort but an ongoing change for the better.
12. We've taken "rubbish" as our ongoing theme, with the result that we don't just tip our rubbish somewhere else now but are taking active steps to clear it up permanently.
13. We've made a good job of clearing out and tidying up inside the plant but there's still a lot of rubbish lying around outside.
14. Our working environment is altogether tidier and the number of defective items we're producing is being steadily reduced.
15. We've cleared out the tools we don't need and tidied the rest up; it's made our work that much easier.
16. When I joined this company seven years ago, everything looked pretty well organized to me. When you start 5S, though, you soon realize the job goes on and on.
17. With all our tools sorted and in their proper places, work doesn't take half as long to complete.
18. Those parts of the office that are out of sight have improved too; you get the feeling that the place is bigger now. Office efficiency has clearly also been improved.
19. It's easier to tell what the stock situation is now and this makes inventory control much easier.
20. I've come to appreciate the meaning of the expression "wider, shallower storage."

Shopfloor comments from groups that have started to use the fixed-position photographic approach (Selection No. 2)

Company T—Plant N

Impressions of the company's 5S drive

1. *T Circle*

   Although we formally designate one of our circles to be in change of a specific task, we don't simply dump the problem in their laps and let it go at that. We are all involved. At first we didn't feel at all comfortable with the idea of having our names listed in the responsibility column but now we've got used to it. We're even starting to volunteer ourselves for different tasks.

2. *W Circle*

   Our original idea in selecting the present photographic focus was to cut down on the amount of space wasted in our section. When we came to try it out, however, we soon found our orientation shifting toward the creation of a "paperless" or even search-free environment. The paperless idea in particular seems to hold all sorts of promise. All four of us have succeeded in making our desk drawers into paperless, search-free work areas.

3. *R Circle*

   The workplace itself looks a lot tidier and there has been an improvement in morale which is giving everyone more of an appetite for their work. The storage shelves have been brought into line with each other and the aisles widened; it's much easier and safer to get around the place now.

   We've improved a lot of different parts of the work area and the procedure of laying in stock has become a pleasure, compared to the major headache it once was. We placed the emphasis on fixed-position photography and this helped us progress with our 5S activities. As a result, work is much easier to deal with now. We're determined to continue to make active use of this approach.

4. *A common view voiced by each of the circles*

   Up to now, preparation for presentations has been a real headache but now we've got a photographic record which tells virtually the whole story, and this makes our preparations a whole lot easier.

2. Typical evaluations following the introduction of fixed-position photography into small group activity

Company T—Plant N

Term 47 PART 1 Summary (June to September 1991)

		Stage 1		Stage 2		Stage 3		Stage 4		Average committee evaluation	Number of meetings (minutes)
		20/6/1991		20/7/1991		20/8/1991		20/9/1991			
Section	Circle	Total score	Average score	Total score	Average score	Total score	Average score	Total score	Average score		
Preparation Section	A	6.00	1.00	14.00	2.33	23.00	3.83	30.00	5.00	4.50	16
Preparation Section	B	6.00	1.00	12.00	2.00	18.50	3.08	30.00	5.00	4.33	13
Section 1	C	6.00	1.00	13.00	2.13	19.50	3.25	29.00	4.83	4.00	14
Section 1	D	6.00	1.00	9.00	1.50	18.00	3.00	30.00	5.00	3.83	11
Section 2	E	6.00	1.00	10.00	1.66	20.00	3.33	29.00	4.83	4.50	11
Section 2	F	6.00	1.00	13.00	2.16	18.00	3.00	30.00	5.00	4.33	18
Section 3	G	13.50	2.25	15.00	2.50	23.00	3.83	30.00	5.00	4.33	11
Section 3	H	8.00	1.33	14.00	2.33	23.00	3.83	29.00	4.83	4.33	9
Section 4	I	15.00	2.50	15.00	2.50	22.50	3.75	25.50	4.25	3.67	10
Section 4	J	6.00	1.00	12.00	2.00	17.00	2.83	24.00	4.00	3.50	13
Operation Section	K	6.00	1.00	16.00	2.66	18.00	3.00	21.00	3.50	3.16	7
Operation Section	L	6.00	1.00	22.00	3.66	22.00	3.66	30.00	5.00	3.83	13
Quality Control Section	M	6.00	1.00	6.50	1.08	21.00	3.50	25.50	4.30	3.83	16
Quality Control Section	N	6.00	1.00	12.00	2.00	18.00	3.00	25.50	4.30	2.66	7
Technical Section	O	6.00	1.00	12.00	2.00	17.00	2.83	18.00	3.00	2.50	9
Technical Section	P	6.00	1.00	6.00	1.00	6.00	1.00	6.00	1.00	1.00	0
Technical Section	Q	6.00	1.00	13.00	2.13	20.00	3.33	28.00	4.66	4.17	8
Total		102.50	1.18	214.50	2.09	324.50	3.18	440.50	4.14	3.67	186

3. Results of activity carried out by Company S–Plant C

Section	Space effect (space management results)	Level 5 attainment (by the improvement level screening committee)	5S improvement stickers (our own 5S improvement recognition labels)	5S improvement proposals (5S-based improvements only)	Fixed-position photography Average score at the end of six months
A	58.0m²	41 (including 22 gold labels)	98	90	4.05
B	11.5m²	21	47	98	3.67
C	51.0m²	12	12	62	3.90
Administration Section	4.0m²	7	0	89	3.90
Processing Section	5.0m²	6	0	10	3.80
Total	130.0m²	87	157	349	3.90 (Total score = 1,680)

1. The company's 5S improvement drive ran from 29/9/90 to 14/3/91
2. The main technique in the 5S drive involved in the use of a fixed-position photographic approach; we will continue to use this technique from April onwards.
3. We used 429 fixed positions and carried the operation out in six stages.
4. On March 21, 100 people from the general manager down set to work for two hours to give the designated lines a cleaning.
5. We started publishing regular 5S news in the form of a 5S newsletter.
6. Once a month, the 5S Committee carries out a full-scale 5S Patrol.

4. Benefits gained from the fixed-position photographic approach

- Reduction in time wasted looking for things
- Reduction in time wasted in handling operations
- Better use made of small work areas
- Clearing of aisles
- Securing of spare space
- Facility inspections made easier and preventive maintenance made possible
- Reduction in the number of injuries and serious accidents
- Reduction in the number of mechanical breakdowns and improved operating rates
- Increased affinity of workers for workplace
- Improvement in layout
- Readier visual detection of problems
- Detection and reduction of quality defects
- A cleaner, tidier workplace

A brighter, livelier workplace

A better working environment

Higher quality and throughput

04

Collection of Sample Improvement Photographs

1. Points to look for when carrying out 5S activity

One of the major problems facing any group or company as it sets out on a 5S activity drive must be to decide precisely what it is they should be looking for and just where to start looking. It is often said that once you have identified the problem, you are already 90 percent of the way toward improving it. The longer an operator has been working in a particular workplace, the less likely it is that he/she will be able to readily identify areas in need of 5S improvement. Although this should be fairly obvious, I have often found that this point is only poorly understood.

As explained earlier on, the fixed-position photographic approach starts with photographing parts of your work area you would prefer others not see. However, since the possibility that the resulting photo might prove embarrassing is unlikely to be uppermost in the photographer's mind, he/she is likely simply to go ahead and take the picture. This makes it extremely revealing to see just which areas the operators on the shop floor have chosen to photograph (Stage 1). I would suggest that readers of this book might well start by comparing this photo collection with the situation in their own workplace.

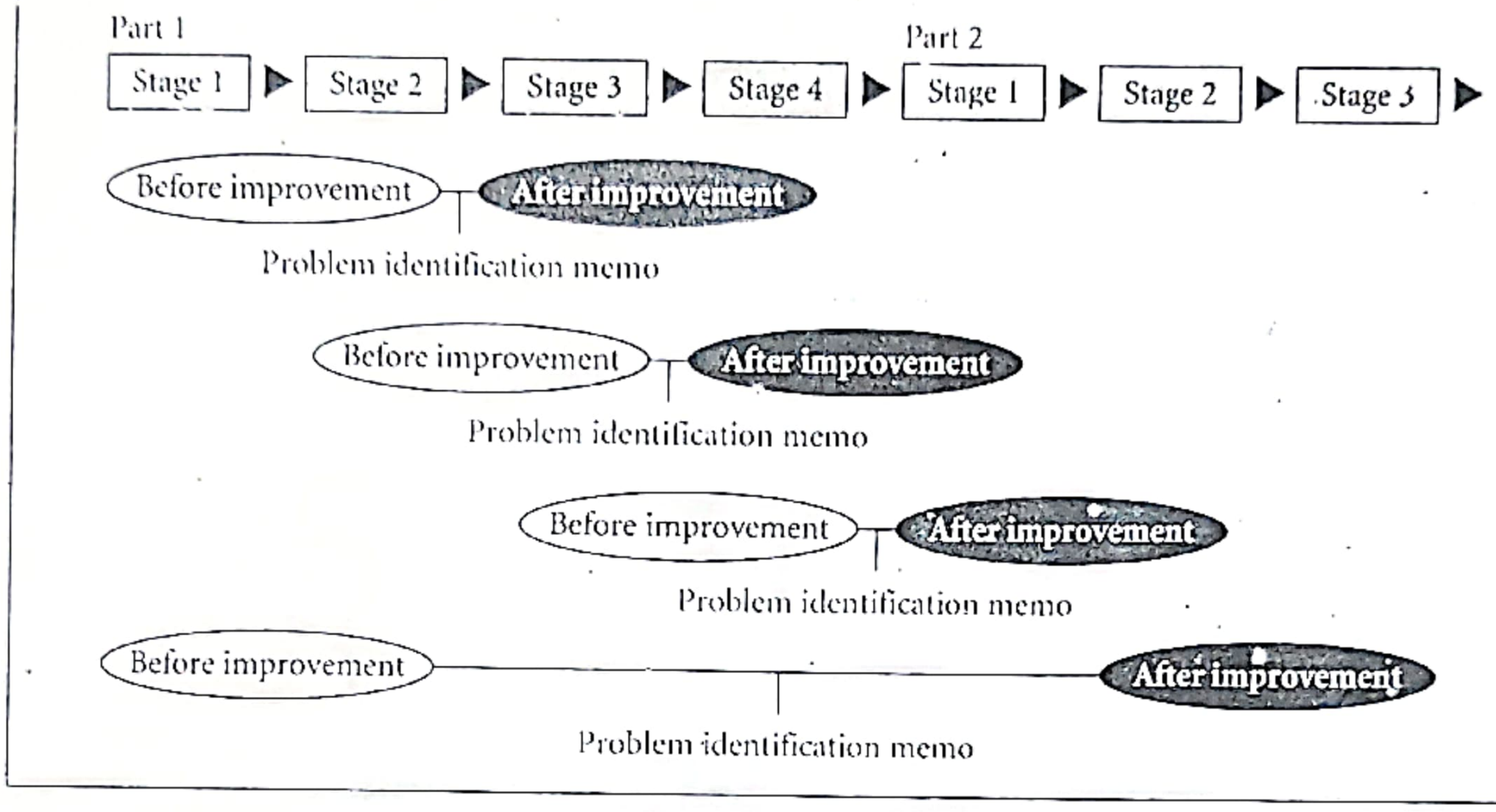
2. Importance of the process

Generally speaking, photos taken before and after improvements are made have their own uses. At the same time, however, it is also important to remember that the fixed-position photographic approach involves recording a series of pictures of a particular target area. This time-series enables the user to see at a glance

"Who?"
has done
"What?"
"When?"
to improve
"Which problem area?"

It also enables the user to tell whether there are "still problems" remaining and whether there has been "any back-sliding" in areas that are supposed to have been improved.

The following chart should help the reader grasp the overall pattern of these relationships.



Note: A problem identification memo can be used before, during and after improvement as an ongoing record of associated improvement activity, and is named for the problems it addresses.

* The memo provides a useful means of keeping an ongoing record of improvement activity before, during and after improvement. The note-type worksheet is used to record the progress of improvement activity, and its basic objectives are:

- To encourage the supervisor to keep a close eye on what is happening in his/her workplace, to help cultivate the supervisor's perceptive skills and to provide a day-to-day record of what is being done.
- Once a problem has been identified, it is noted down immediately in memo form (this encourages recording problems without requiring an immediate proposal for solving the problem).
- Once the problem has been addressed, the result is entered in the "After improvement" column.

Using a problem identification memo helps enhance the effectiveness of the fixed-position photographic approach.

* For a more detailed explanation of this memo-based technique, refer to a paper entitled *Konna yarikata no aru genba kaizen no susumekata* [*The Improvement Book: Creating the Problem-free Workplace*, 1990, Cambridge; Productivity Press].

3. Motivation aid

Photographs produced using this approach are not subsequently stashed away in a desk drawer but are displayed where everyone can see them. They, therefore, serve not merely to hold a mirror up to our own shortcomings but also provide an important motivational aid to those involved.

Notes and ideas for the next stage or stages are entered in the "Remarks" column by the operator responsible, along with encouraging comments and advice by supervisory staff and committee members which will help to encourage the operator in question to succeed.

4. Operation of a management cycle at each stage

By completing the record and acting accordingly, a management cycle involving planning, implementing, checking and acting is automatically set in motion at each stage in the process. This makes the fixed-position photographic approach ideal for use in group circle activity.

5. The photos for each stage do not always match the original record

In this book, the photos have generally been arranged to match the way they originally appeared. On going through the book, the reader will find each series of photographs laid out in an easy-to-understand four-stage format. Limitations on the space available, however, have on occasion obliged us to reduce the number of photos in a series. In some places a series of three photographs has been reduced to two for incorporation onto a single page, with a series of five or more photos occasionally reduced to four to enable them to fit onto a two-page spread. I apologize for any feeling of discontinuity this may cause.

6. Key points

I have introduced key points, which do not appear on the original records, to draw the reader's attention. The selection of key points represents my personal reaction to each photograph.

7. Study the sample photos as a guide to future use of this approach

When first making practical use of this approach, the beginner is likely to have some difficulty deciding the allocation of evaluation points at each stage in the process. The point allocations used by each of the companies represented in the photos should, however, provide the user with an extremely useful yardstick in the early stages.

5

Illustrated Improvement Examples: I

Clearing Up & Organizing

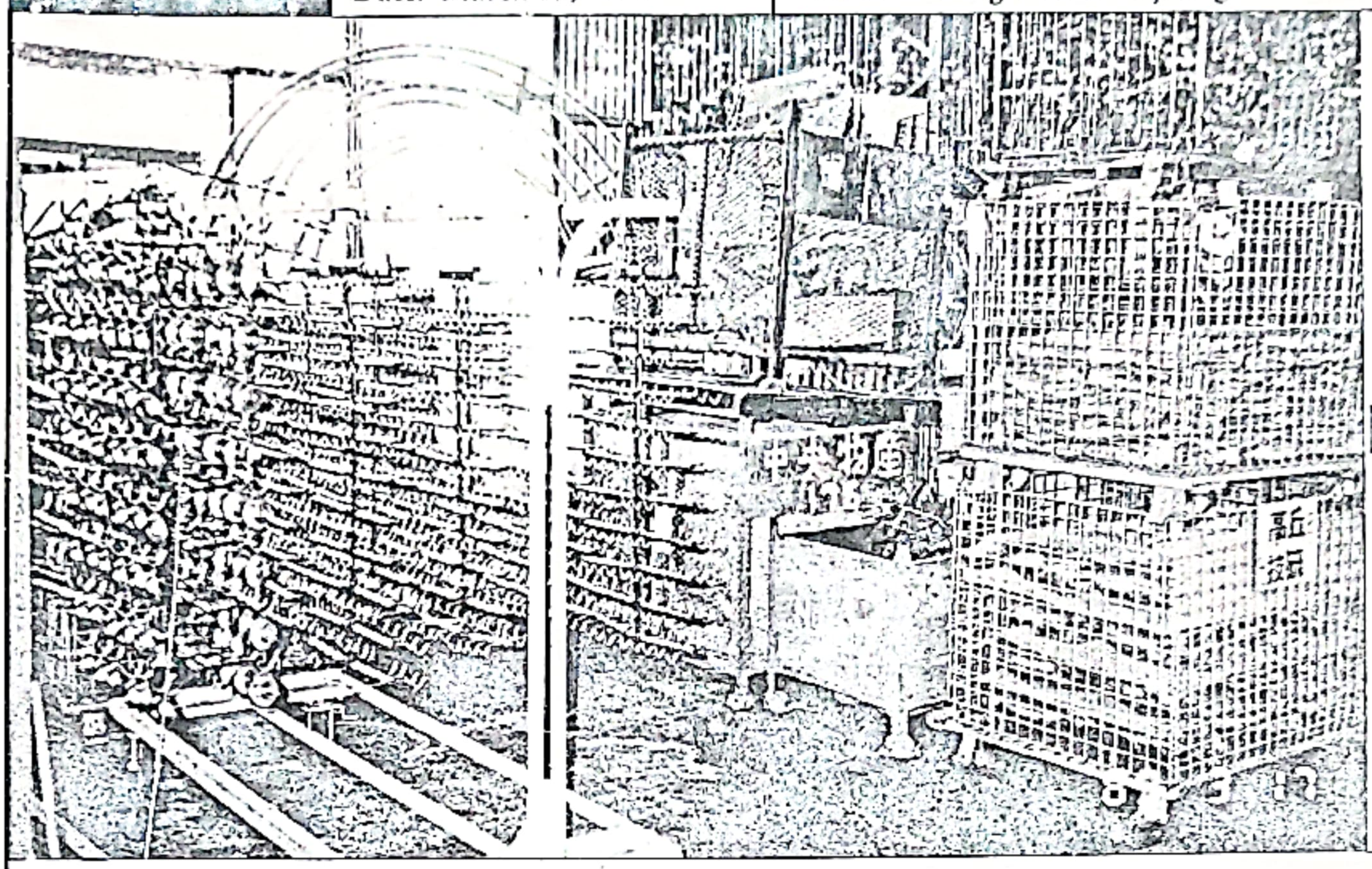
1st STAGE

Target: Clearing away unnecessary items

Place: Galvanization shop

Date: March 17, 1989

Person in charge: Akio Koyanagi



5 4 3 2 1 Evaluation

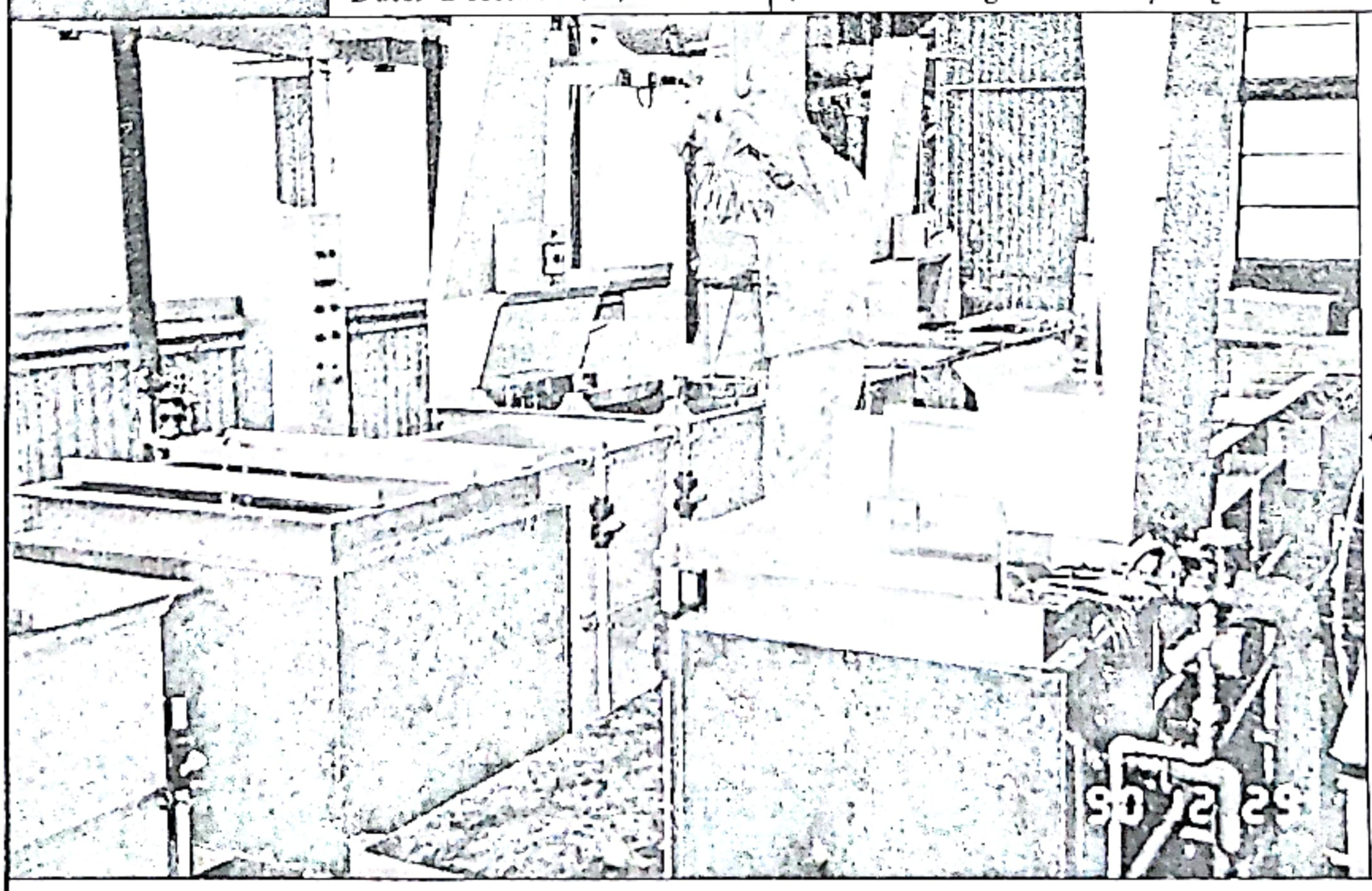
Remarks: Dollies and miscellaneous items are cluttering up an important working area. Clear away the unnecessary items and make better use of the space available.

4th STAGE

Key point: A good example of 5S improvement. Thorough clearing carried out over 18 months has provided the company with a new workshop with the potential for generating new added value.

Date: December 29, 1990

Person in charge: Akio Koyanagi



5 4 3 2 1 Evaluation

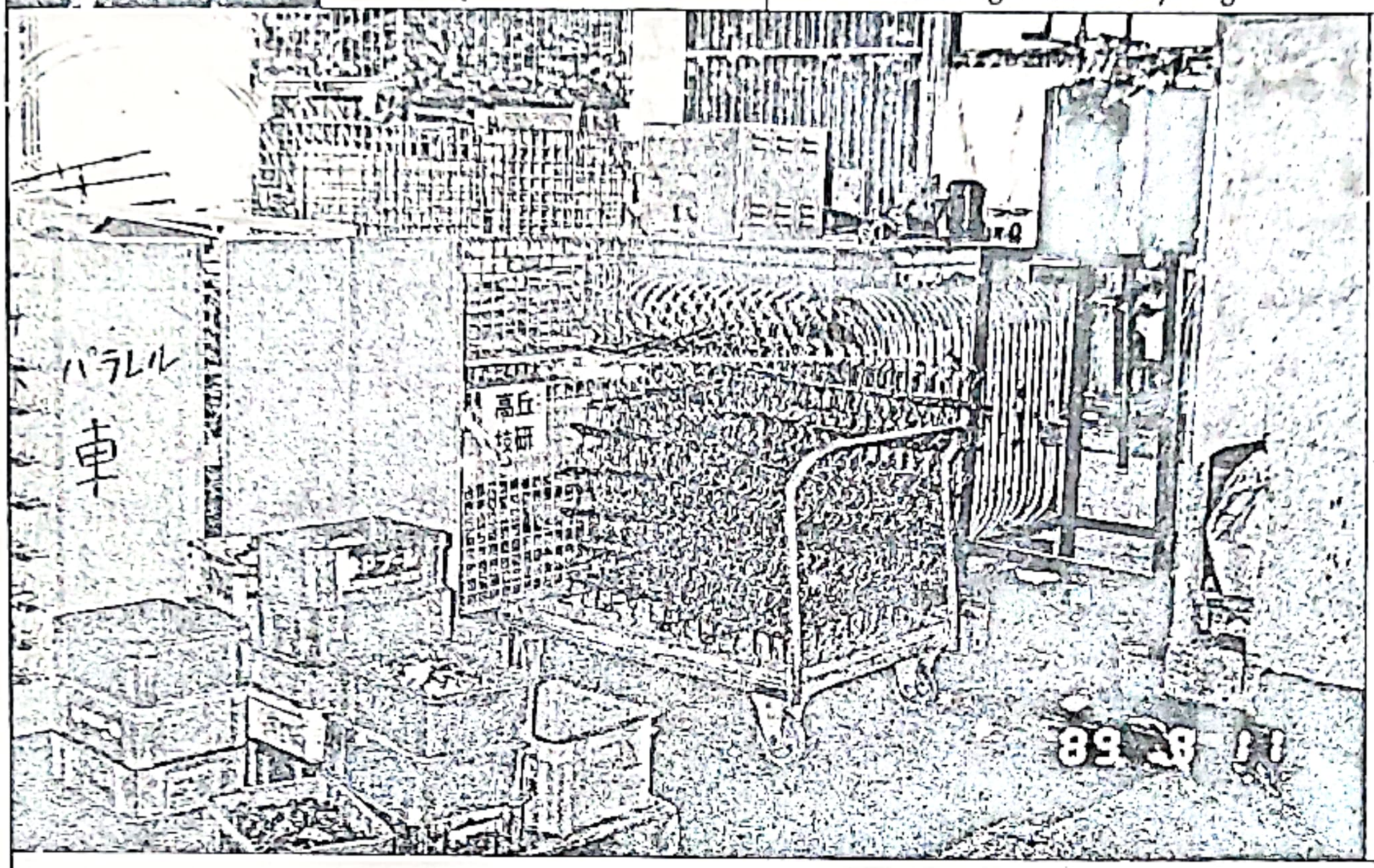
Remarks: The space made available was just right for the company's long awaited Ni-P plating machinery. Operating space: 90 square meters

Sanko Seisakusho Manufacturing Dept.

2nd STAGE

Key point: If the clearing operation fails to make any real progress, the continued use of fixed-position photographic records will provide motivation for the operators.

Date: September 11, 1989 | Person in charge: Akio Koyanagi



5
4
3
2
1

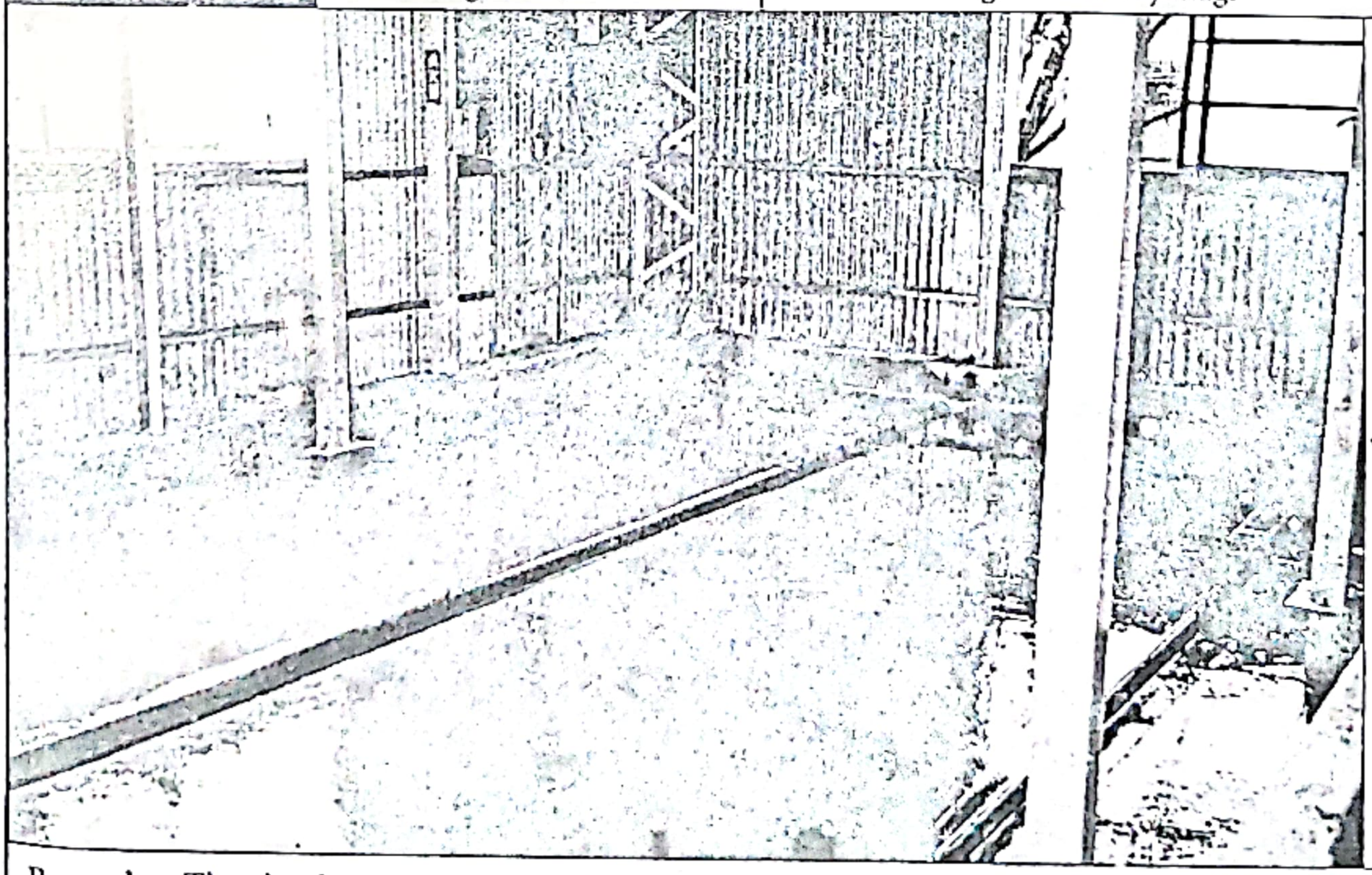
Remarks: Six full months of clearing things out has failed to produce the required result. The only thing now is to get to work and make a proper job of it. You have to admit that the shop doesn't look quite as bad as it did.

Evaluation

3rd STAGE

Key point: The whole shop has been cleared and cleaned from top to bottom.

Date: August 11, 1990 | Person in charge: Akio Koyanagi



5
4
3
2
1

Remarks: The clearing operation has finally been undertaken in earnest. The dollies and miscellaneous items have all been cleared away and the floor has even been painted. A whole new work space has been made available. Well done!

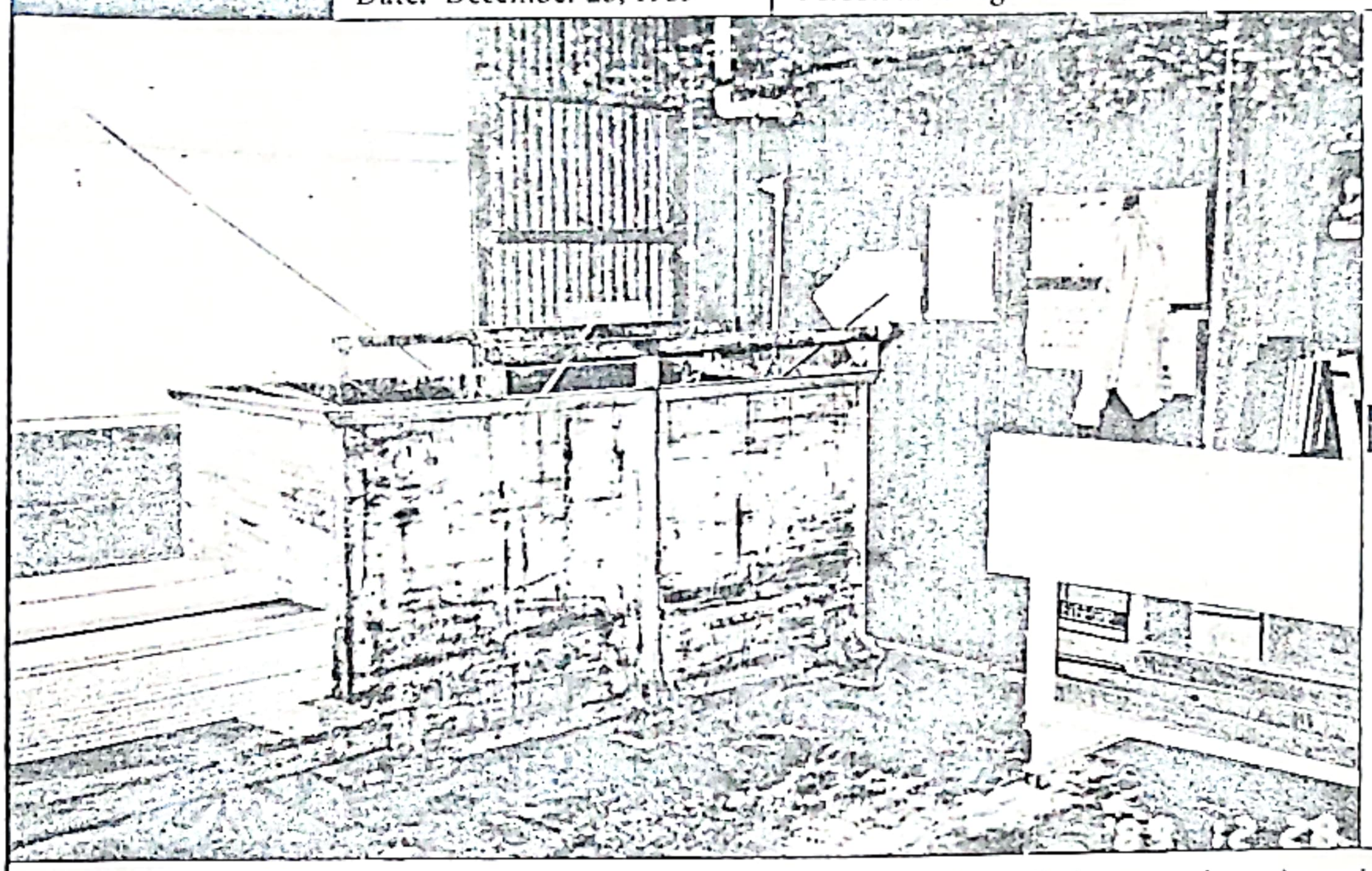
Evaluation

1st STAGE

Target: Initial clear out (to enable use of a corner)

Place: Corner

Date: December 28, 1989 | Person in charge: All the members



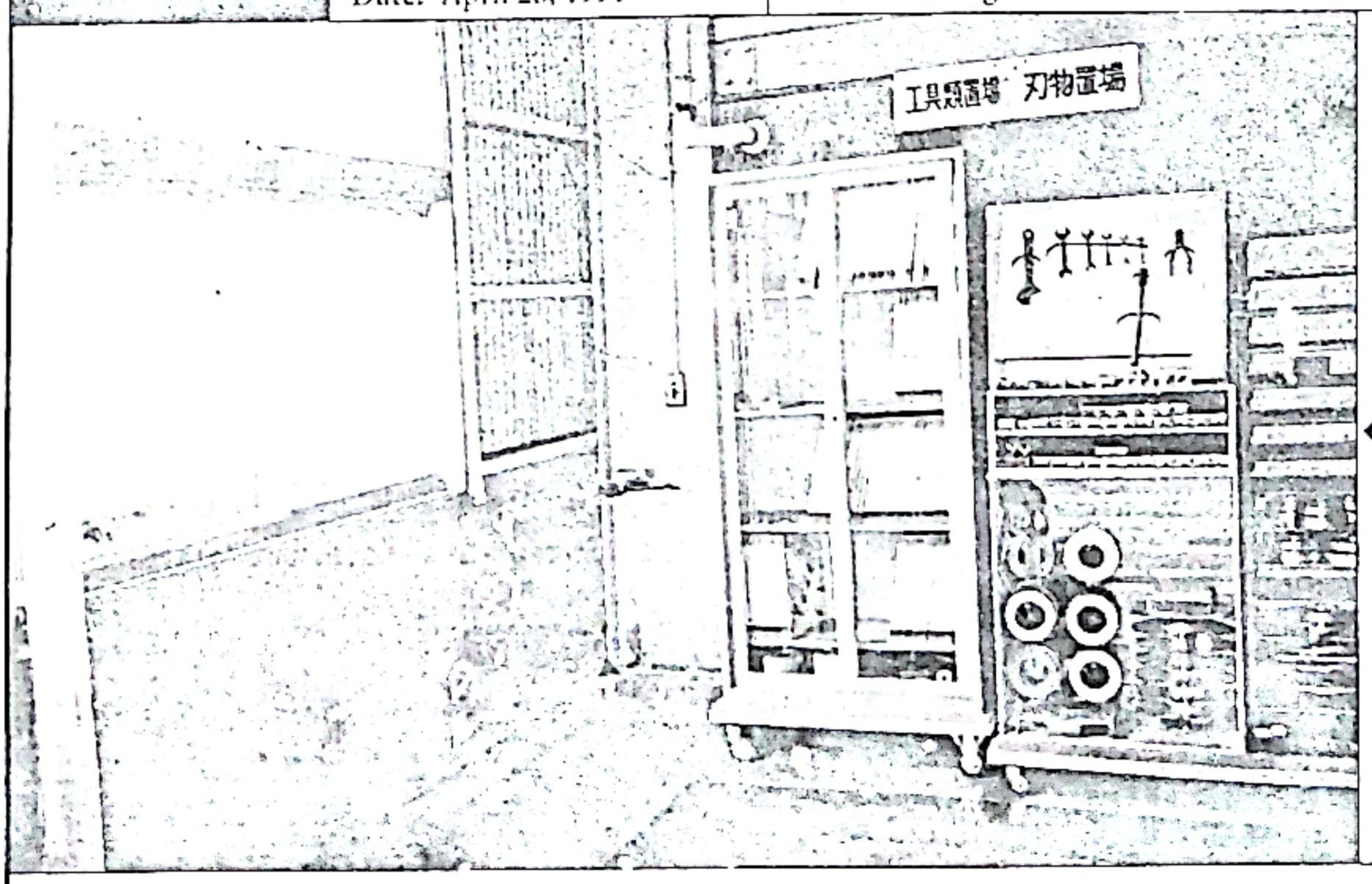
5 4 3 2 1 Evaluation

Remarks: Are these rusty old containers really needed? Let's give a little more thought to how this corner might best be used.

4th STAGE

Key point: Eighteen months after starting the clearing operation, the corner has been completely transformed.

Date: April 28, 1991 | Person in charge: All the members



5 4 3 2 1 Evaluation

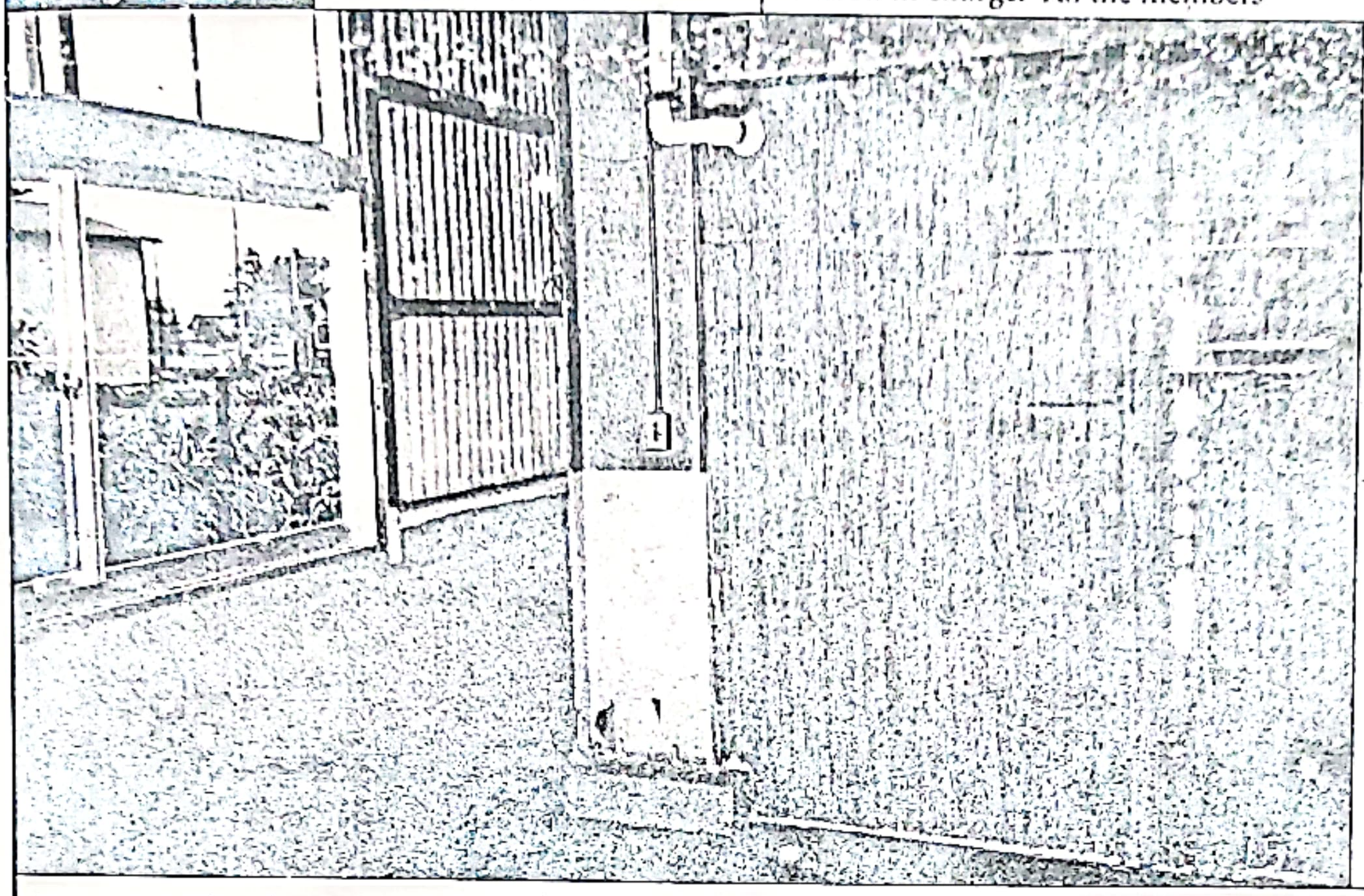
Remarks: Excellent!

2nd STAGE

Key point: Once the unneeded items are cleared out, the whole place, including the walls, is much easier to clean.

Date: June 10, 1990

Person in charge: All the members



5
4
3
2
1
Evaluation

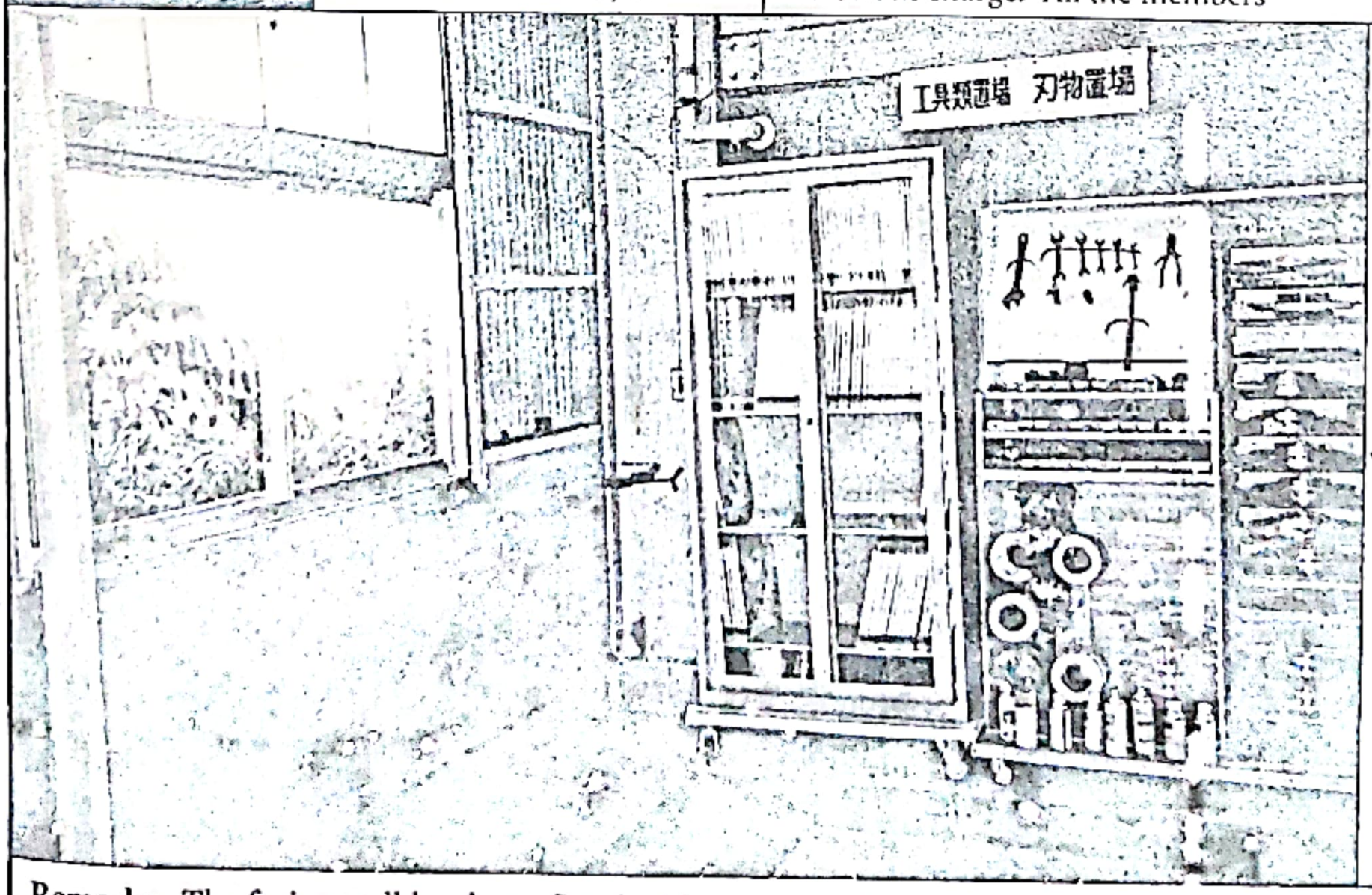
Remarks: The clearing operation is complete and the corner has been cleaned out. It would be a shame to let it slip back into its previous mess now.

3rd STAGE

Key point: A good opportunity to clear up and organize the tool cupboards too.

Date: November 23, 1990

Person in charge: All the members



5
4
3
2
1
Evaluation

Remarks: The facing wall has been fitted with storage cabinets for tools, making sure to leave enough space for an aisle by the end wall.

1st STAGE

Target: Clearing away unwanted items

Place: Around the recovery unit

Date: January 10, 1990 | Person in charge: Tsunoda

5 4 3 2 1

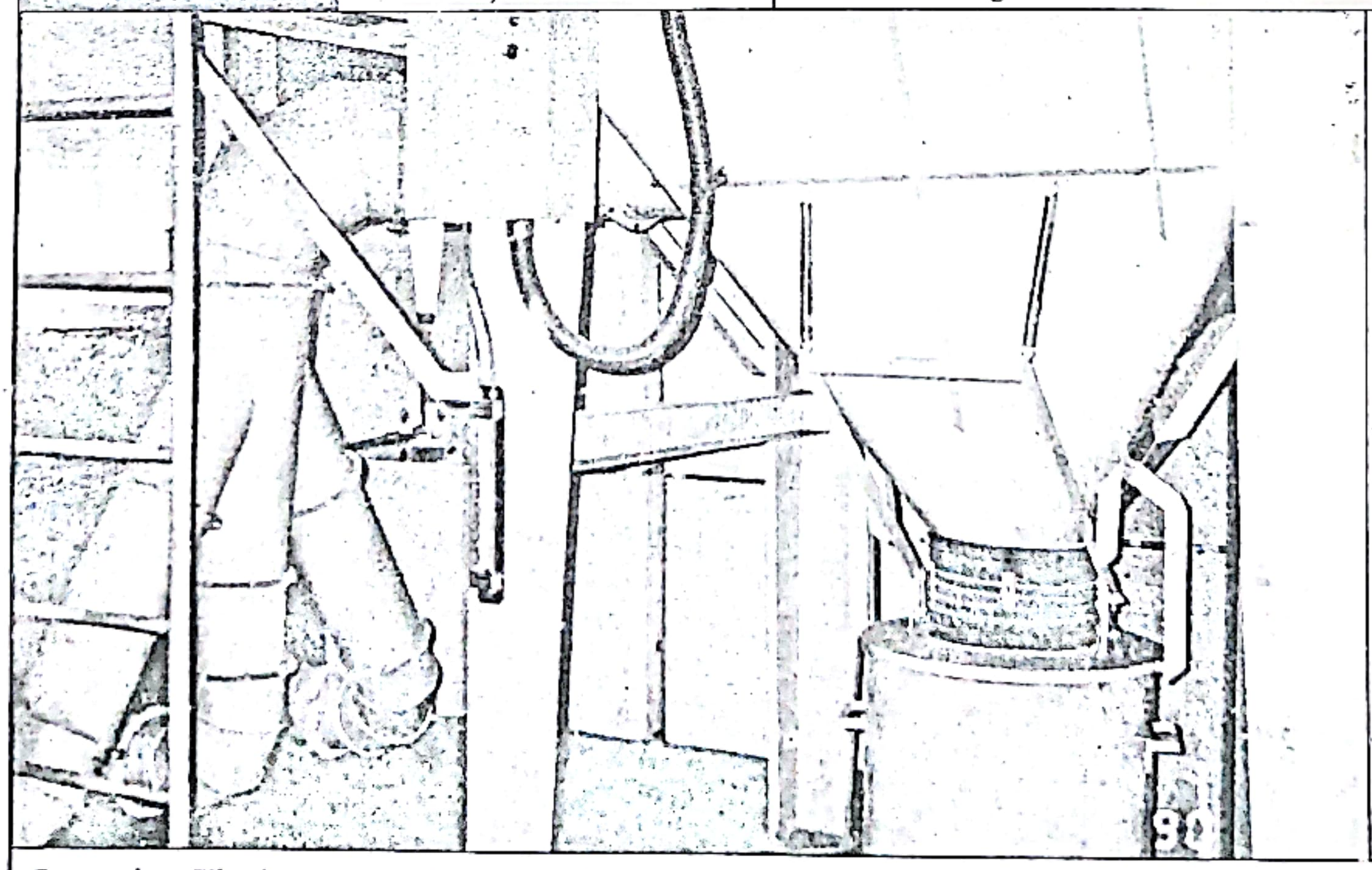
Remarks: Opening the door to the recovery unit was a revelation. Is this supposed to be part of a working plant or is it just a rubbish dump?

Evaluation

4th STAGE

Key point: With the cooperation of all those involved, the area was improved out of all recognition.

Date: May 30, 1990 | Person in charge: Tsunoda



5 4 3 2 1

Remarks: The important thing now is to keep the area in this condition.

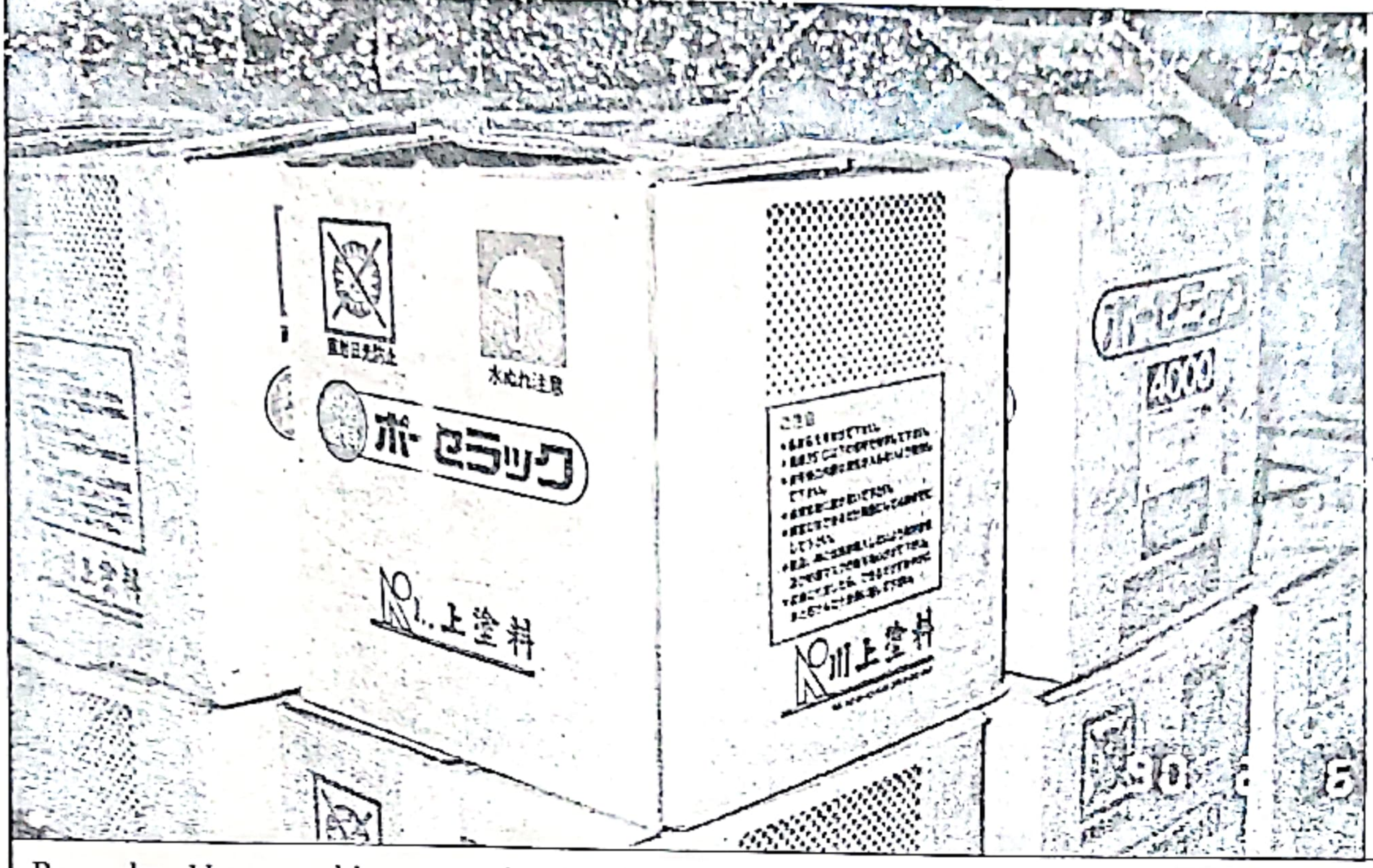
Evaluation

Matsushita Electric Industries Washing Machine Plant in Shizuoka

2nd STAGE

Key point: This area doubles as a storage area.

Date: February 6, 1990 | Person in charge: Tsunoda



5
4
3
2
1
Evaluation

Remarks: Unwanted items need to be cleared away each day.

3rd STAGE

Key point: The operators started clearing out the unwanted items.

Date: April 17, 1990 | Person in charge: Tsunoda

5
4
3
2
1
Evaluation

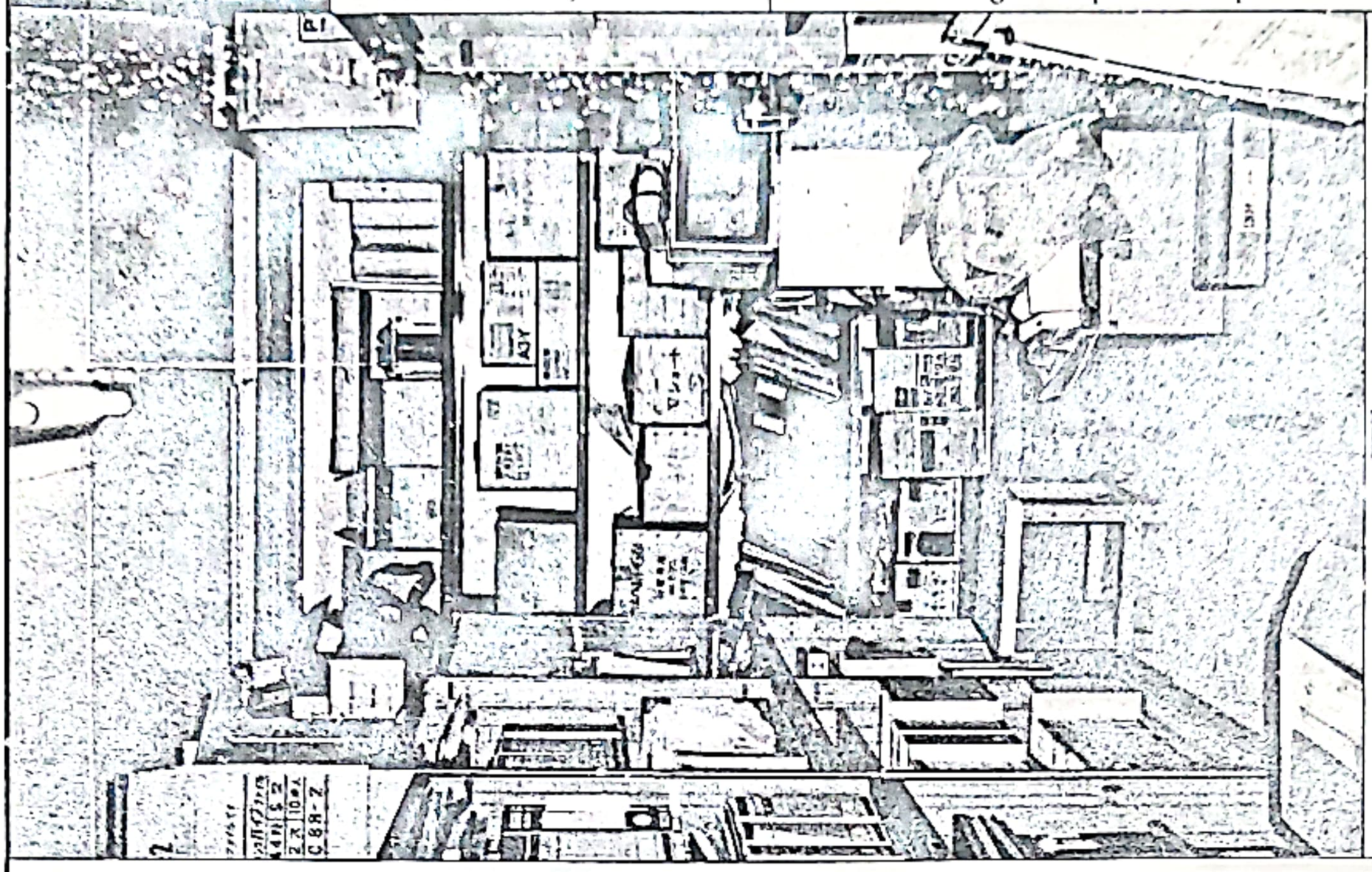
Remarks: As the clearing operation progressed, the room began to look much better; the next job is cleaning.

1st STAGE

Target: The filing room is not a dump. Make better use of the space.

Place: Engineer's office and filing room

Date: October 1, 1990 | **Person in charge:** Tropical Group



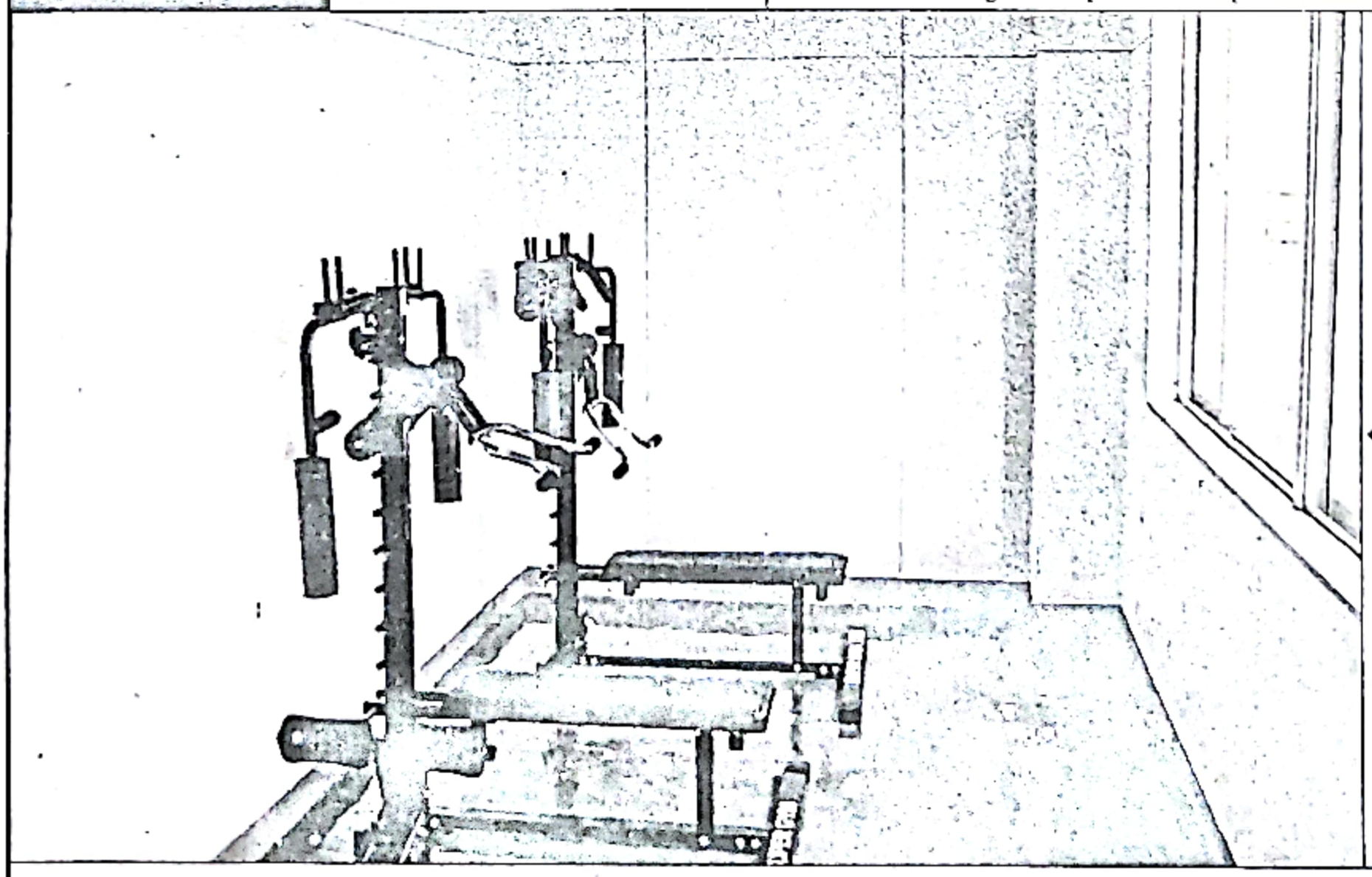
5 4 3 2 1 Evaluation

Remarks: The inside of the filing room is crammed with unnecessary items that it's difficult to tell what's actually filed in there. (It was a mistake to take a vertically oriented picture)

4th STAGE

Key point: The staff decided that it would be better to use the room for weight training.

Date: March 20, 1991 | **Person in charge:** Tropical Group



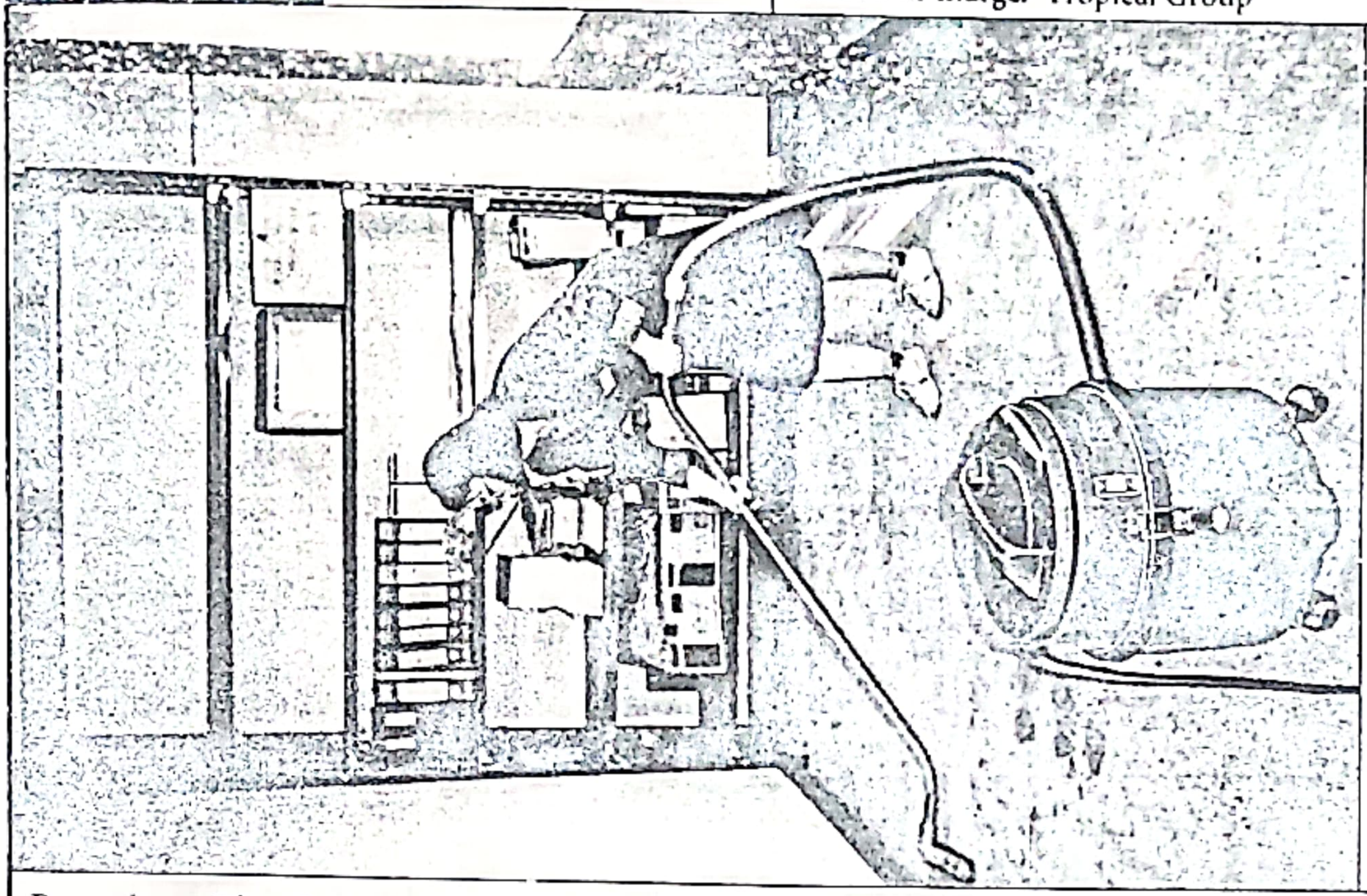
5 4 3 2 1 Evaluation

Remarks: It's been made into an excellent weight training room. Make the most of it; fitness is an important part of the job.

2nd STAGE

Key point: The first step was to make full-scale efforts to remove all unnecessary items.

Date: December 31, 1990 | Person in charge: Tropical Group



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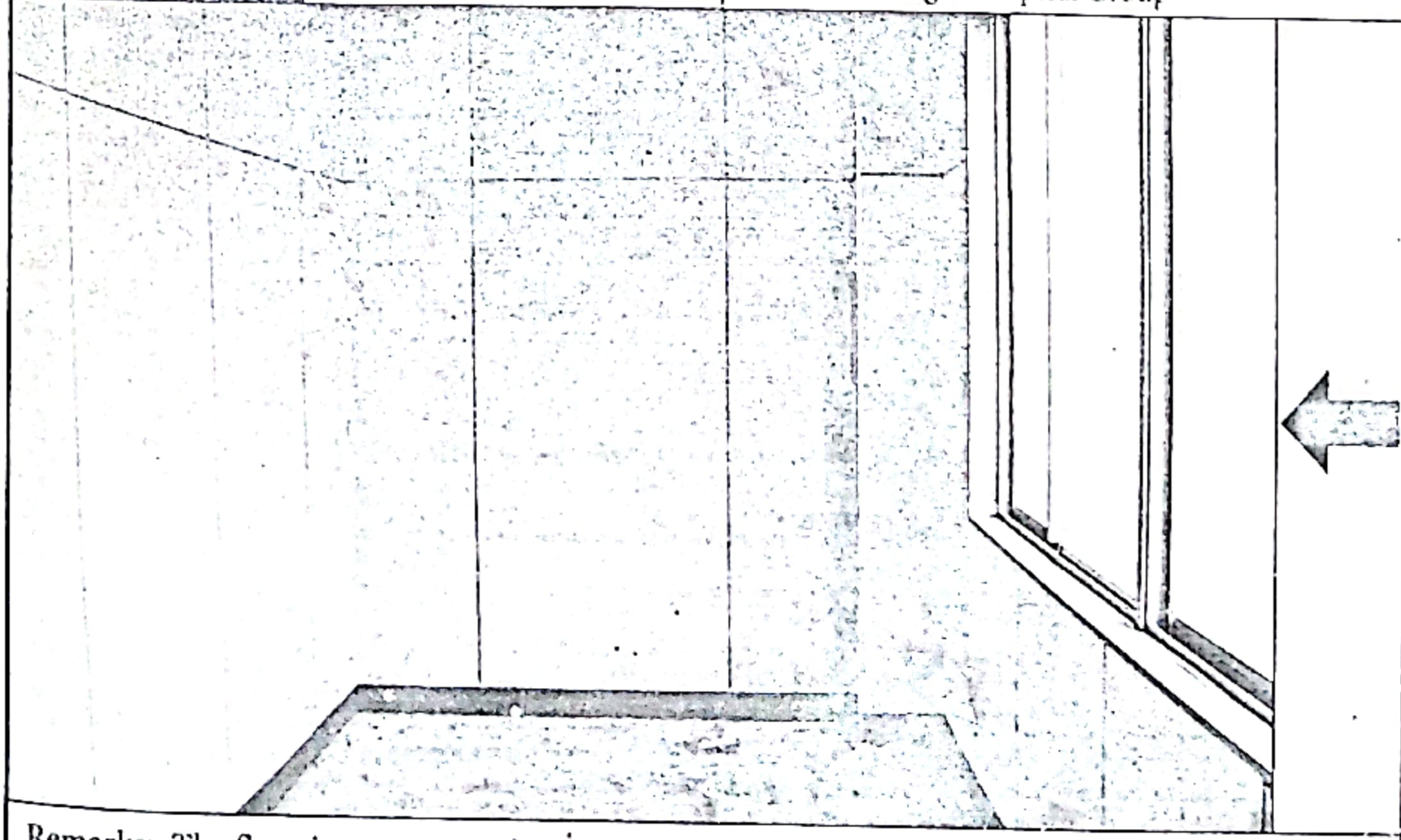
Evaluation

Remarks: • That first step has paid off. (The question now is whether this is a suitable way of filing legal documents; obviously this needs a little thought.) • The room looks much brighter now and cleaning is easier. (It was a mistake to take a vertically oriented picture)

3rd STAGE

Key point: The question of where to store legal documents was debated and the whole staff discussed alternative uses for the room.

Date: February 1, 1991 | Person in charge: Tropical Group



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Evaluation

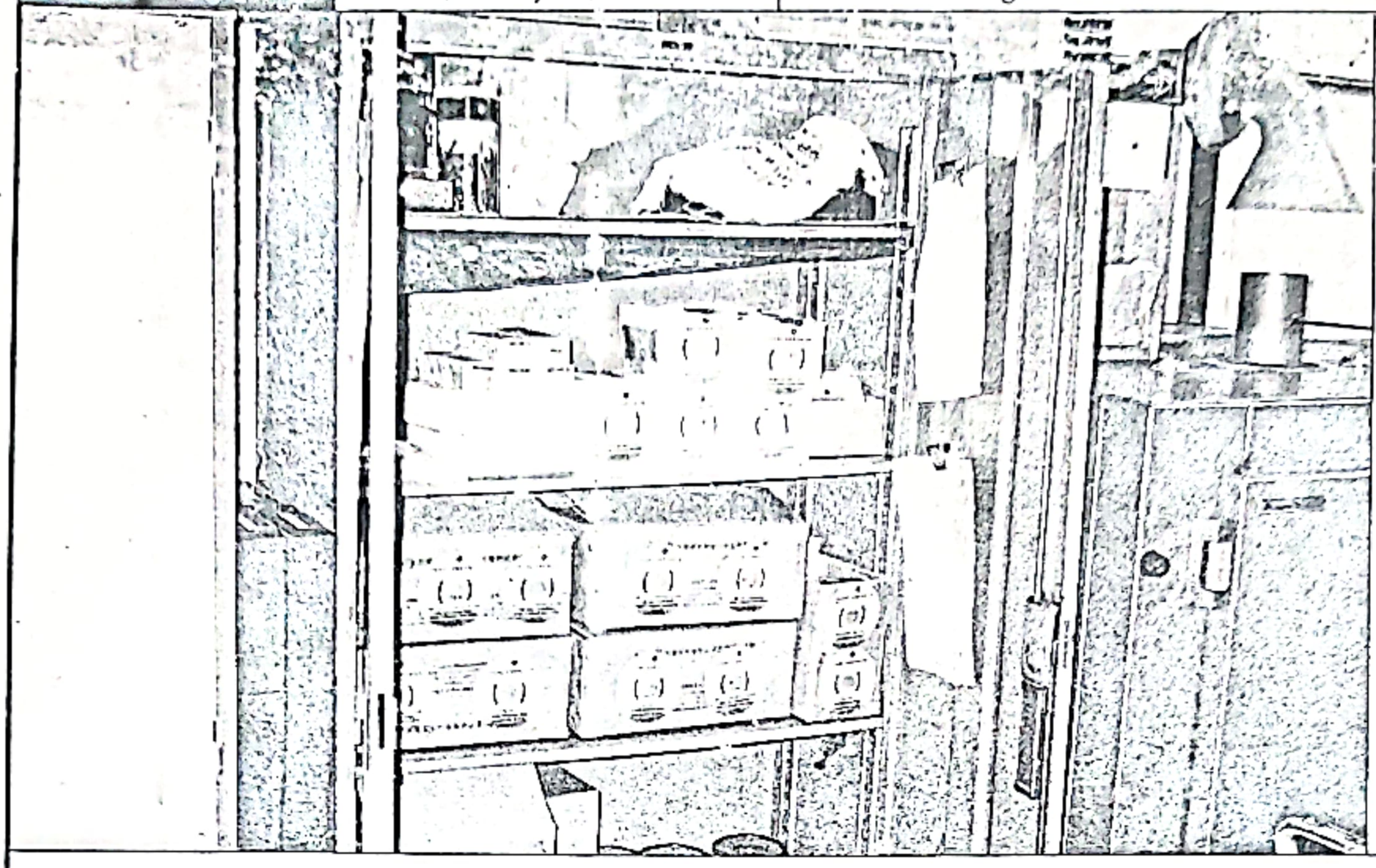
Remarks: The floor is concrete and soon gets dusty; some action should be taken to alleviate this.

1st STAGE

Target: Eliminating vasted space and wasted search time

Place: Small shipping item store

Date: January 31, 1990 | Person in charge: Yamanaka



5 4 3 2 1

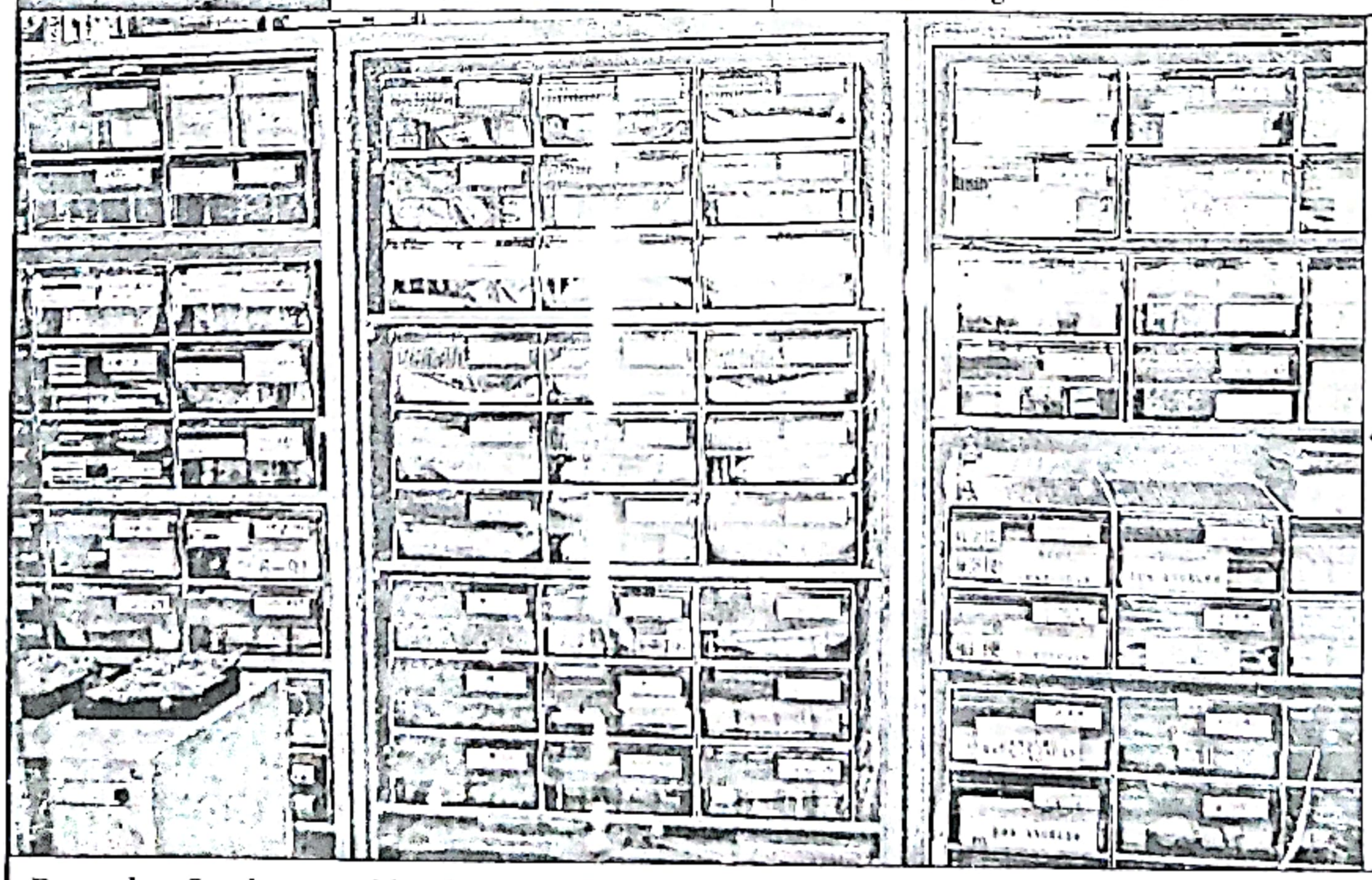
Remarks: Open the door and this is the sight that greets you. What are we storing here, goods or just fresh air? There's no need for the cardboard boxes either.

Evaluation

4th STAGE

Key point: Storage capacity for a variety of different items has been increased, with wasted space eliminated, access improved and depth of shelving reduced. The need for searching has been eliminated by removing the doors.

Date: June 28, 1990 | Person in charge: Yamanaka



5 4 3 2 1

Remarks: Stock control has been made much easier by introducing small transparent cases and labeling each one clearly. The doors have been removed, making it easier to identify the contents of each cabinet at a glance. That's a great idea.

Evaluation

6

Illustrated Improvement Examples: II

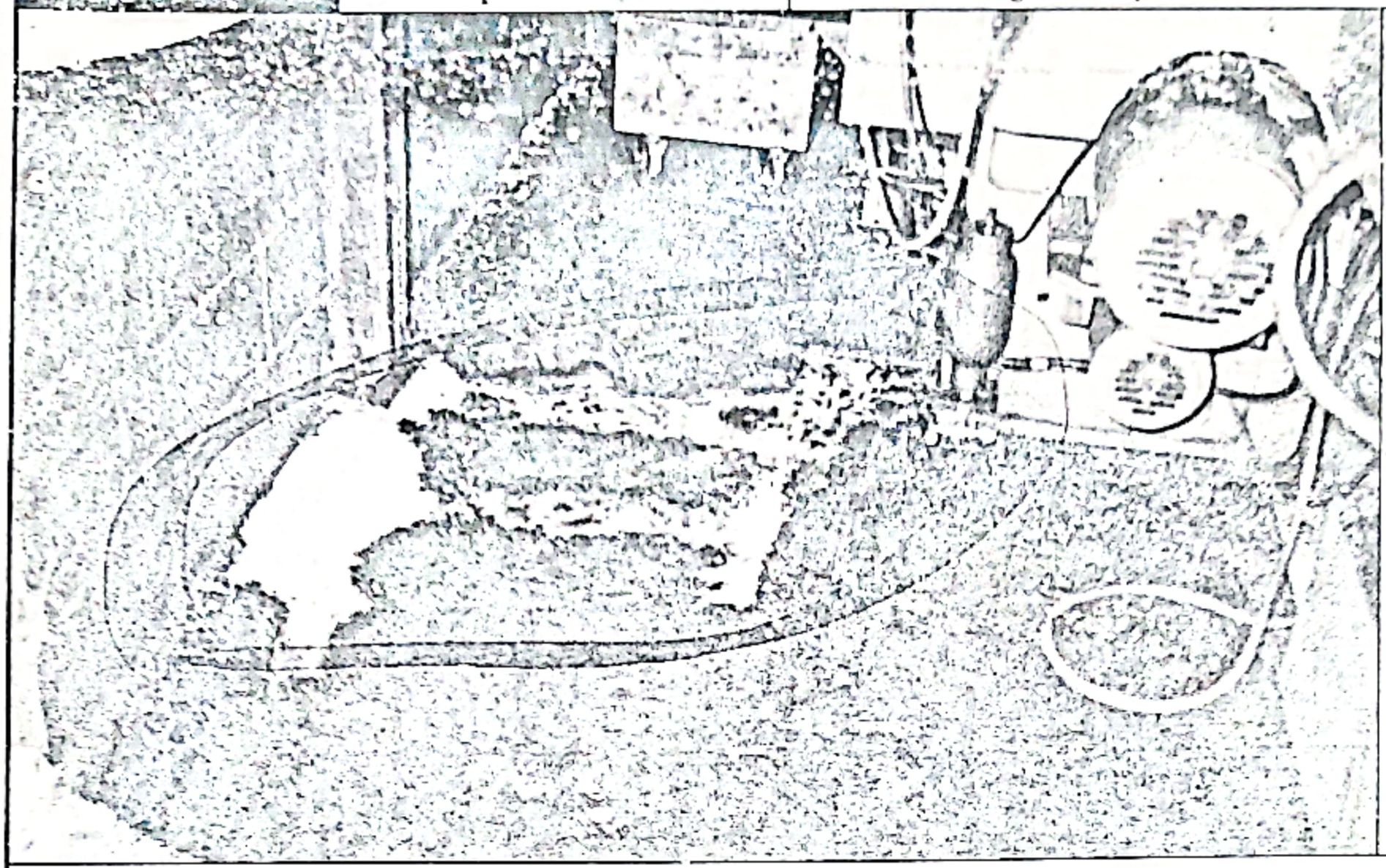
Cleaning & Systematic Cleanliness

1st STAGE

Target: Cleaning up initially

Place: Machine Group 1

Date: September 14, 1935 | Person in charge: Group leader Suzuki



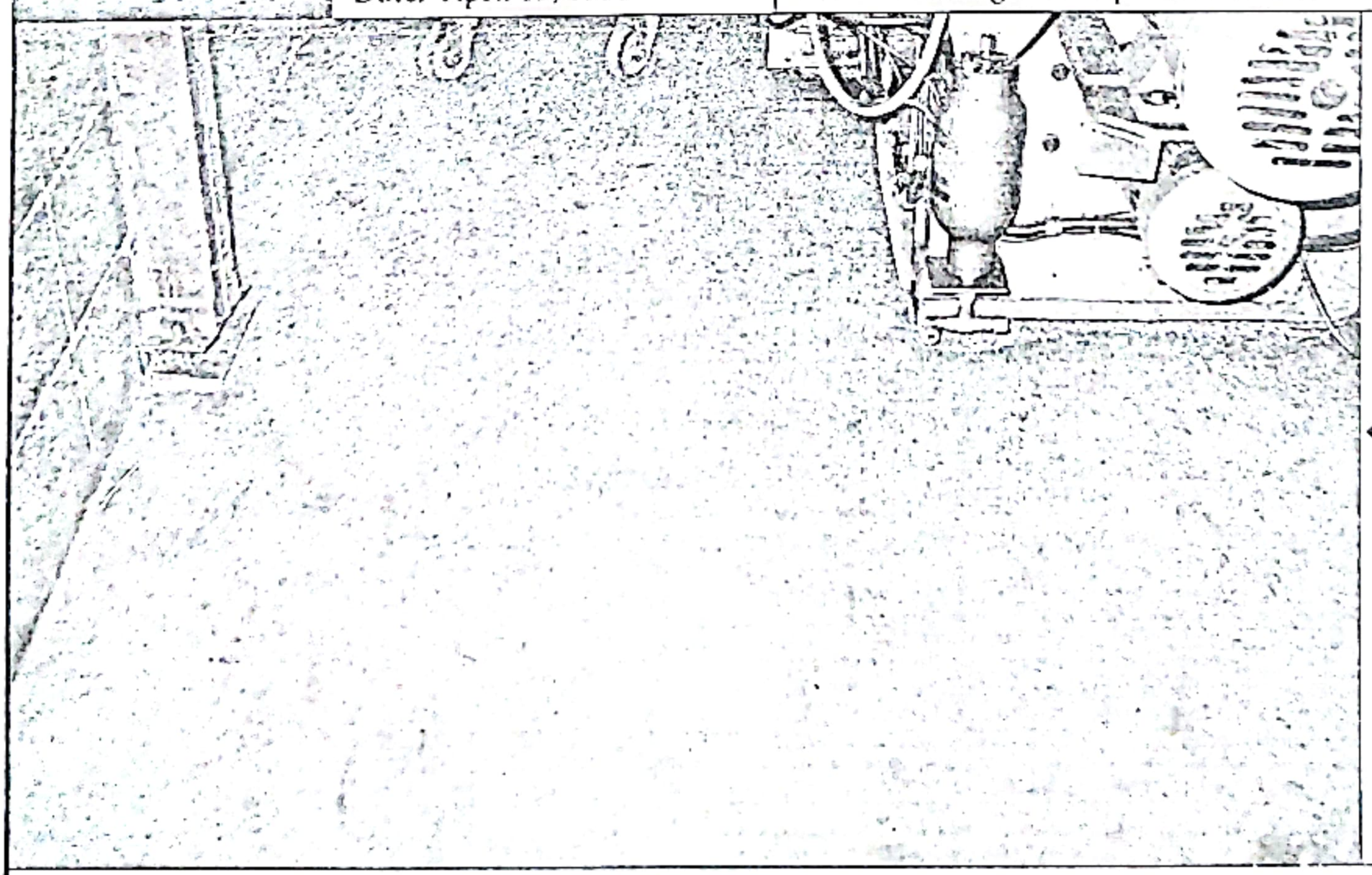
5 4 3 2 1 Evaluation

Remarks: Oil leaks, cutting fluid leaks—it's all just been left in a sickening mess.

4th STAGE

Key point: From the initial cleaning through to leak prevention, the job's been done.

Date: April 19, 1986 | Person in charge: Group leader Suzuki



5 4 3 2 1 Evaluation

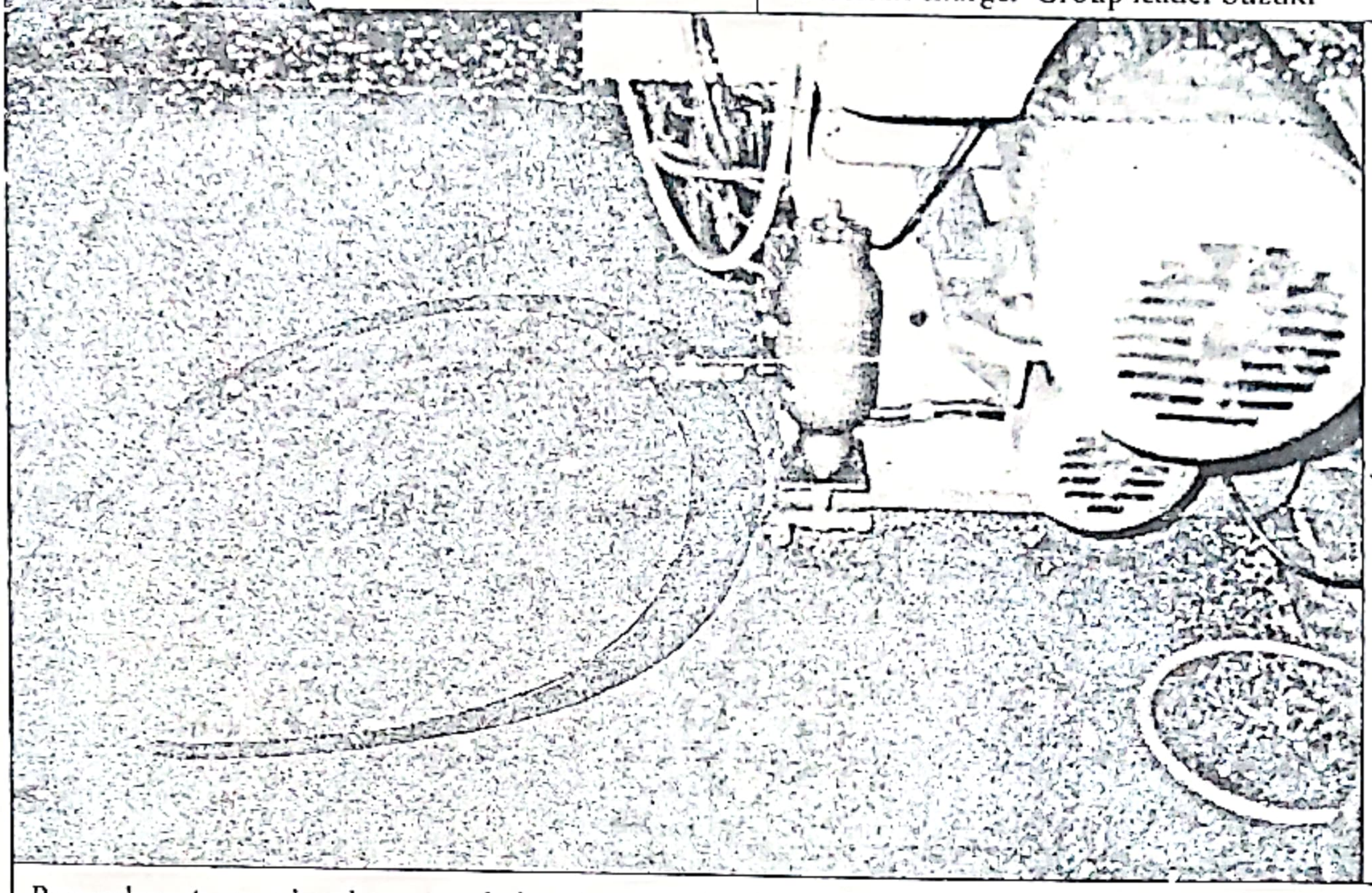
Remarks: It all looks very much better now, but it's not finished yet. The next job is to clean the motor.

Johoku Kigyo Co., Ltd. Car Wheel Manufacturing Dept.

2nd STAGE

Key point: They've started by cleaning the floor. (Take a look at the date.)

Date: December 14, 1985 | Person in charge: Group leader Suzuki



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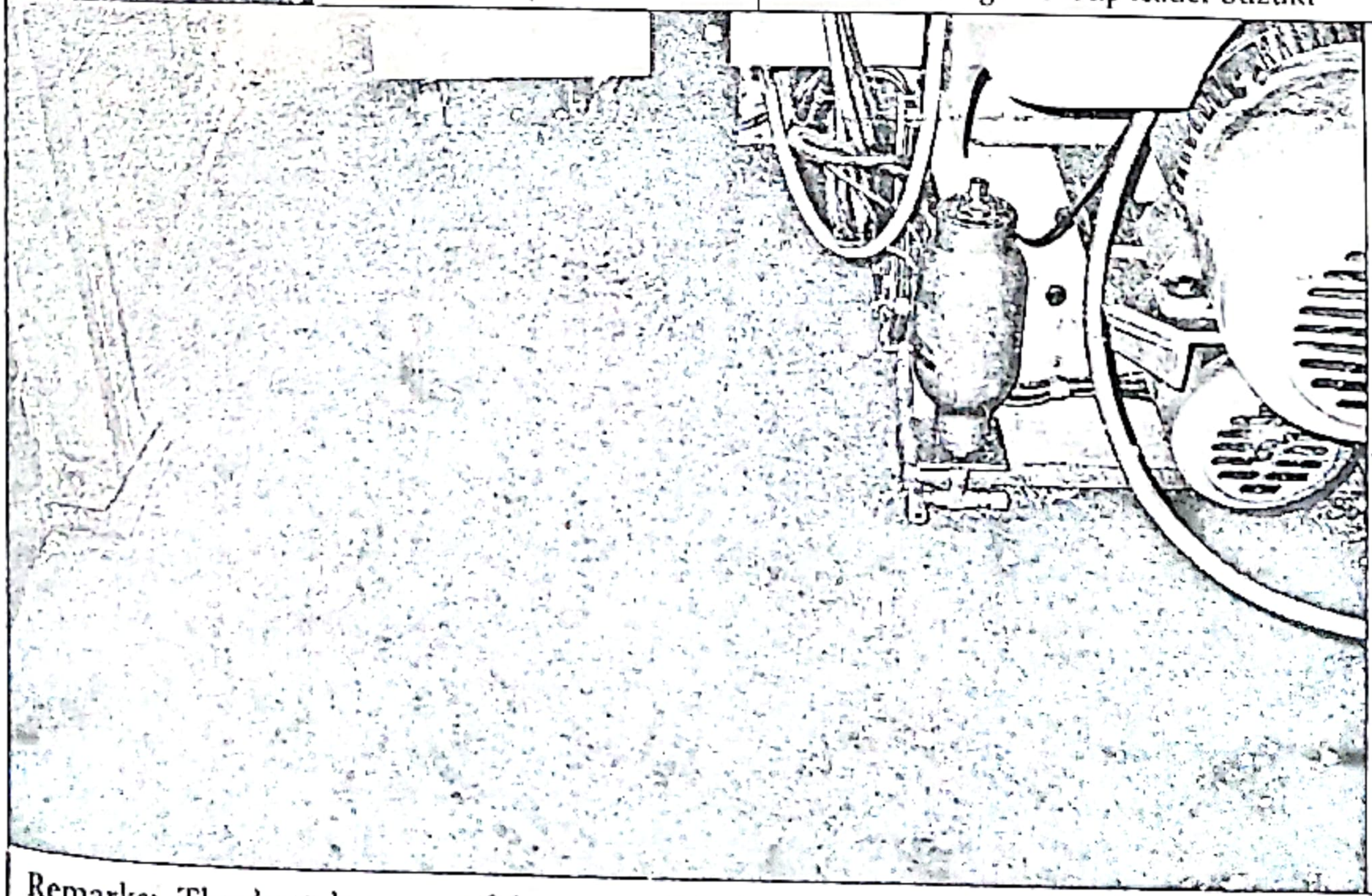
Evaluation

Remarks: A start has been made by cleaning the floor, but something will need to be done to insure that there are no further leaks.

3rd STAGE

Key point: Now the cause of the leaks will have to be dealt with.

Date: February 15, 1986 | Person in charge: Group leader Suzuki



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Evaluation

Remarks: They've taken care of the cause of the leaks, and the floor is looking very much cleaner.

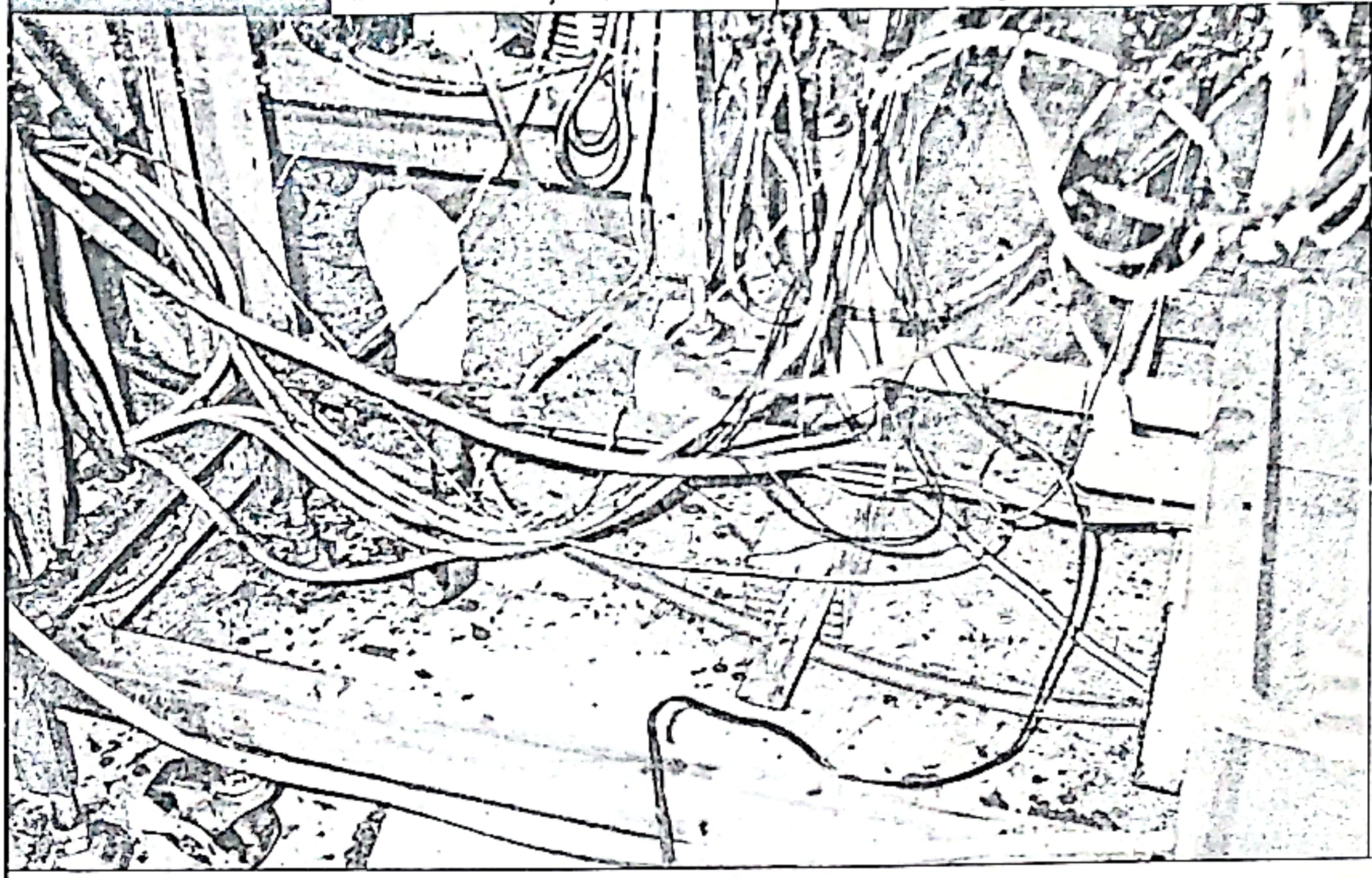
1st STAGE

Target: Tidying up cables

Place: Mold charging line

Date: February 26, 1991

Person in charge: Matsuyama, Fujimatsu and Kitahara



5 4 3 2 1

Remarks: The cables are in a complete tangle. There's bulk waste all over the place and morale in shop is low. It can't be kept clean or properly maintained in this condition.

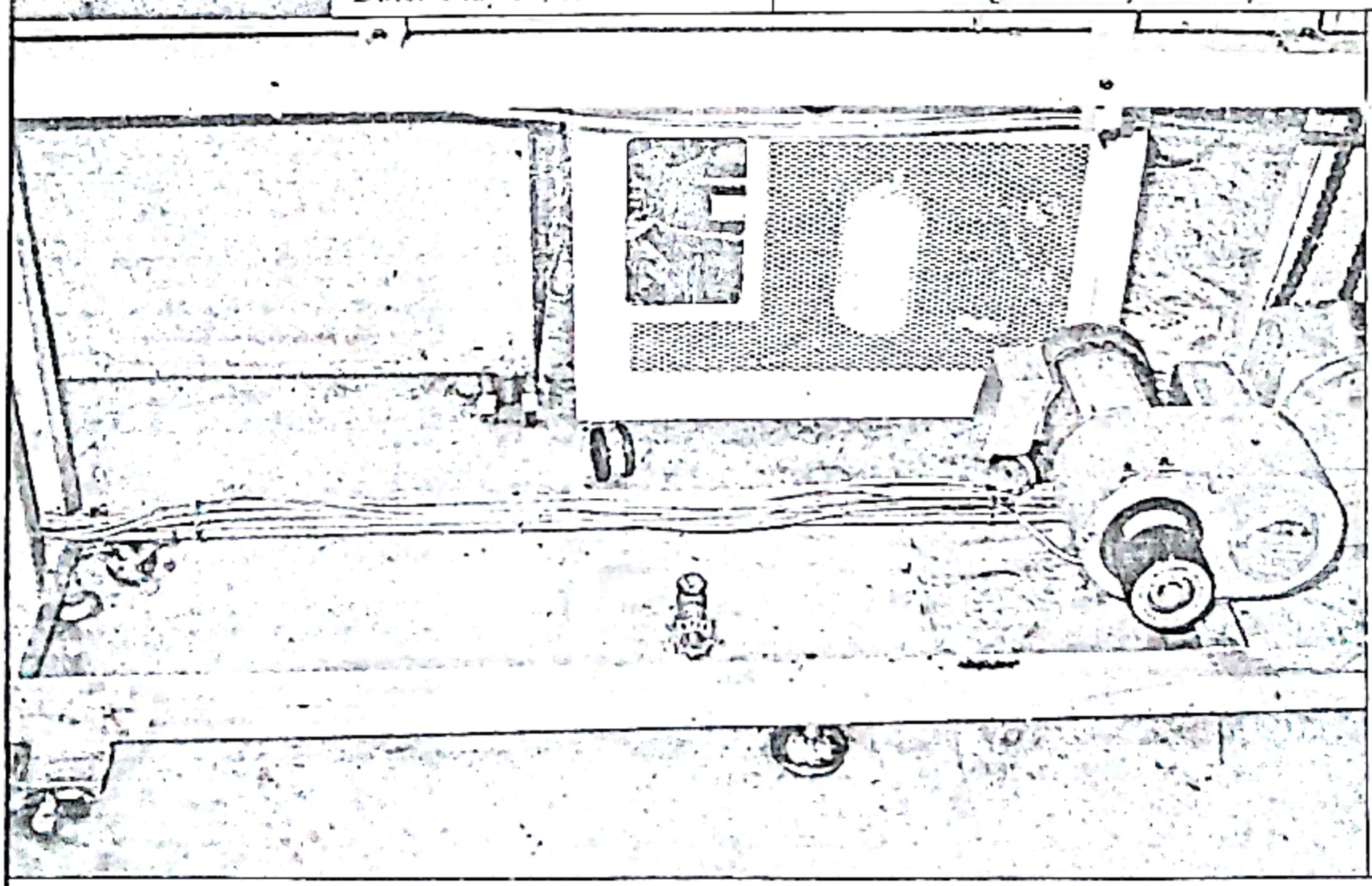
Evaluation

4th STAGE

Key point: The material spillage problem has been solved with the help of 5S.

Date: May 14, 1991

Person in charge: Matsuyama, Fujimatsu and Kitahara



5 4 3 2 1

Remarks: The cables are neatly laid—a vast improvement, and the spillage problem has been addressed. All in all, a great result.

Evaluation

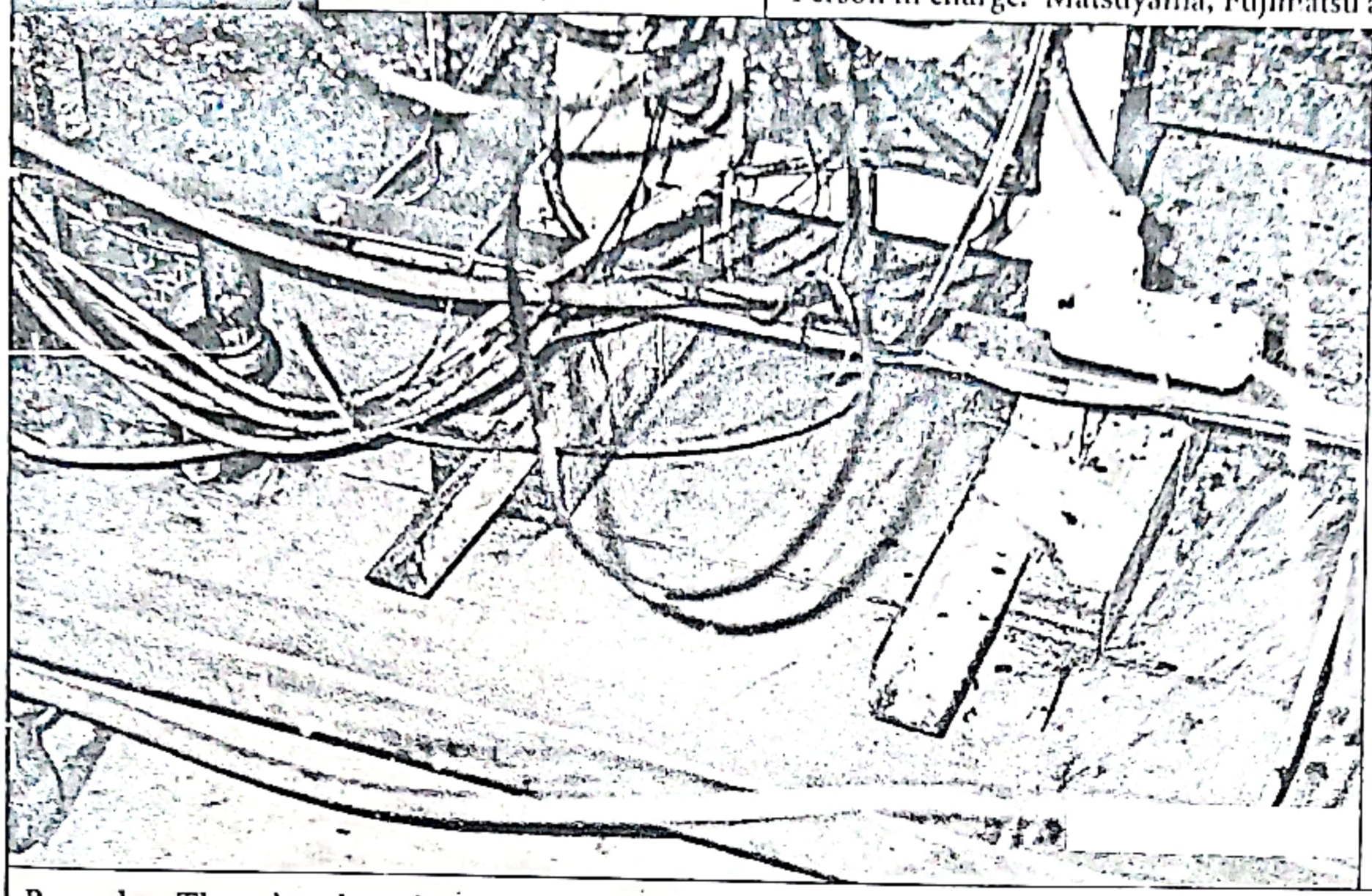
Tokiwa Co., Ltd. Cosmetic Dept.

2nd STAGE

Key point: First thing to do is give it a thorough cleaning. This is the point when it registers just how dirty the whole thing is.

Date: March 5, 1991

Person in charge: Matsuyama, Fujimatsu and Kitahara



Evaluation
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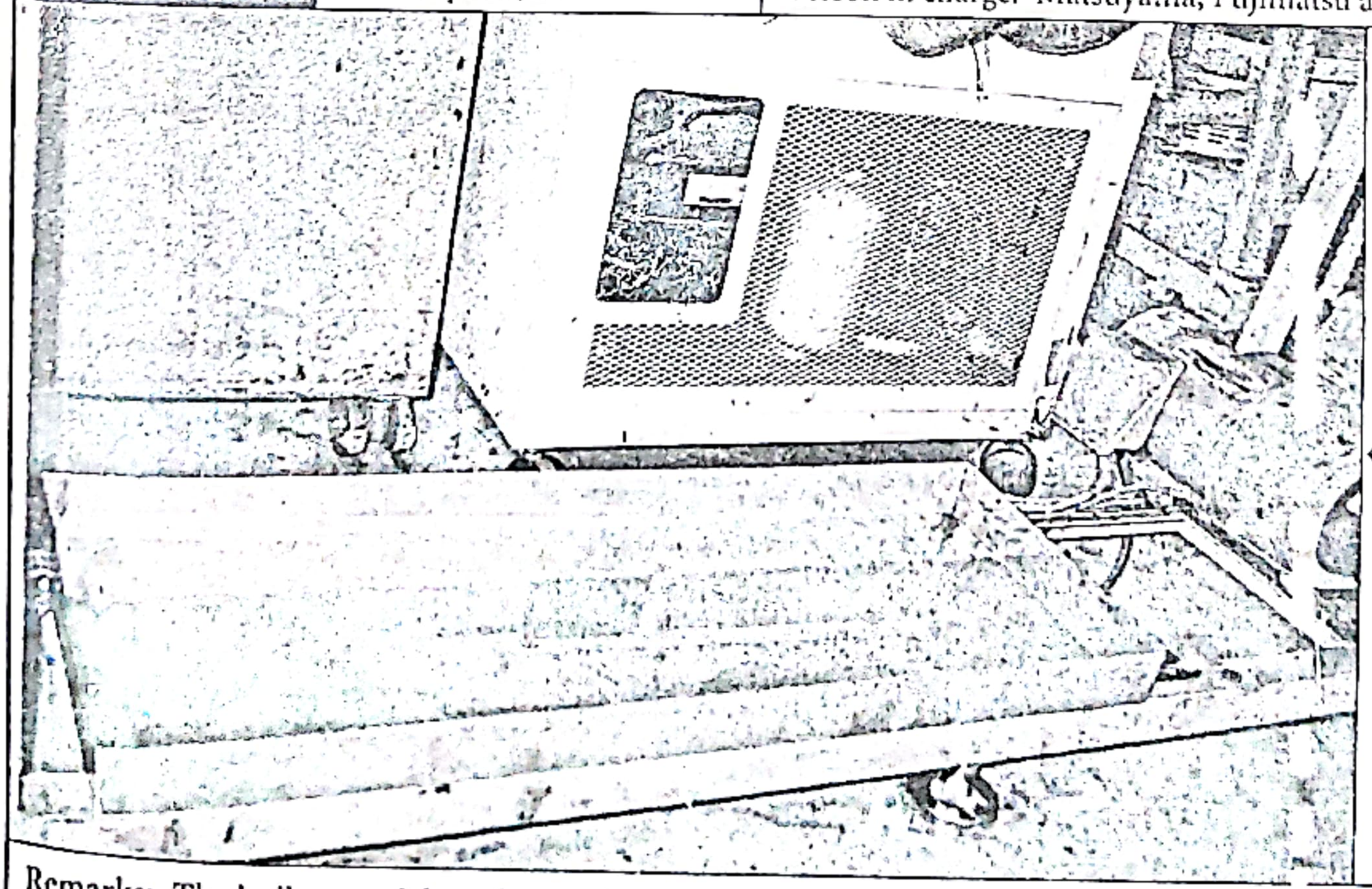
Remarks: The cables have been tidied up and the floor cleaned. There's still a long way to go though.

3rd STAGE

Key point: A material holder has been installed and the lines cleared right away.

Date: April 3, 1991

Person in charge: Matsuyama, Fujimatsu and Kitahara



Evaluation
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Remarks: The bulk material tends to spill over, requiring attention, and the cables need some sort of support.

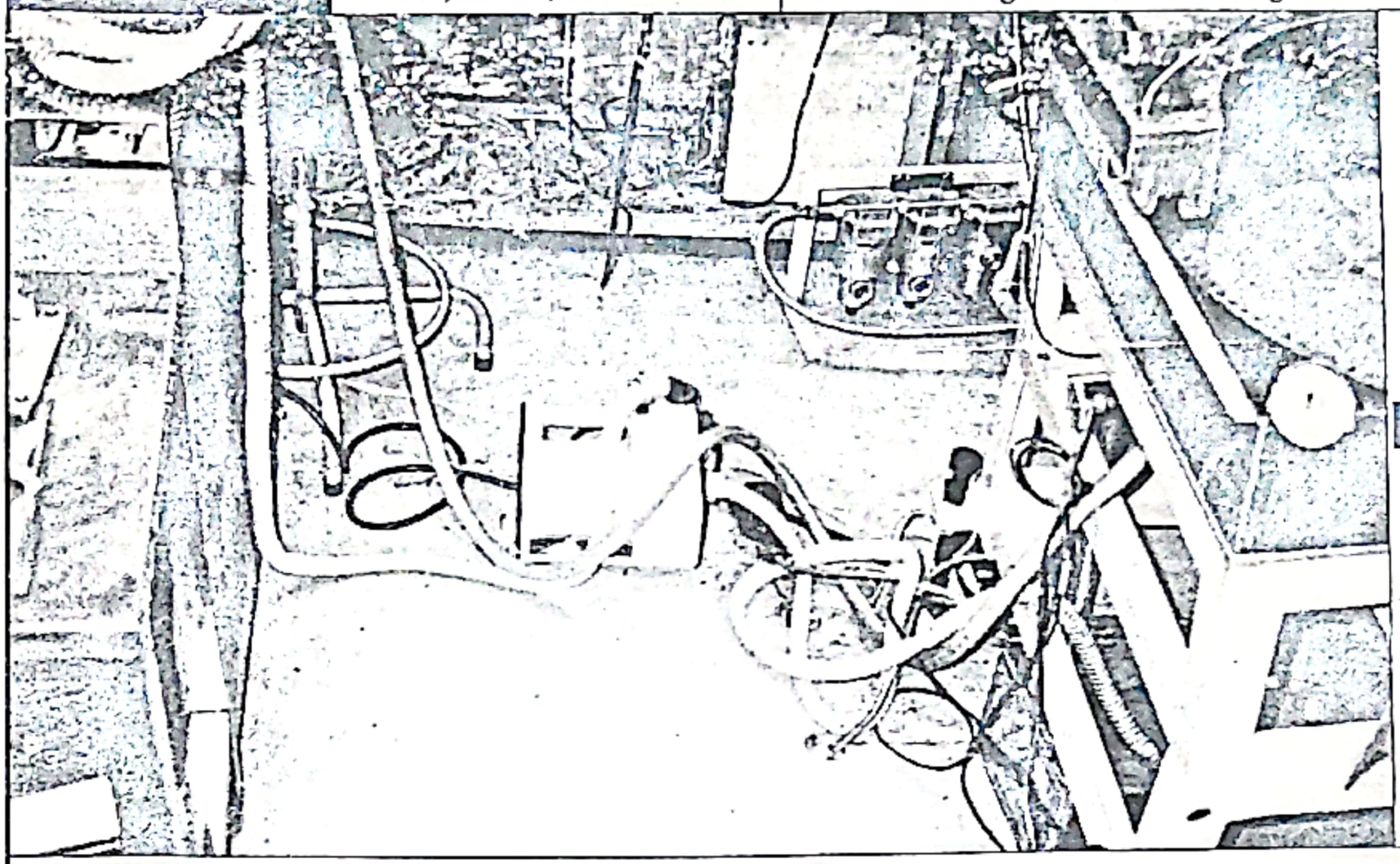
1st STAGE

Target: Cleaning the place up

Place: The area round the pipe charging pump

Date: June 25, 1990

Person in charge: Kitahara and Soga



Evaluation: 5 4 3 2 1

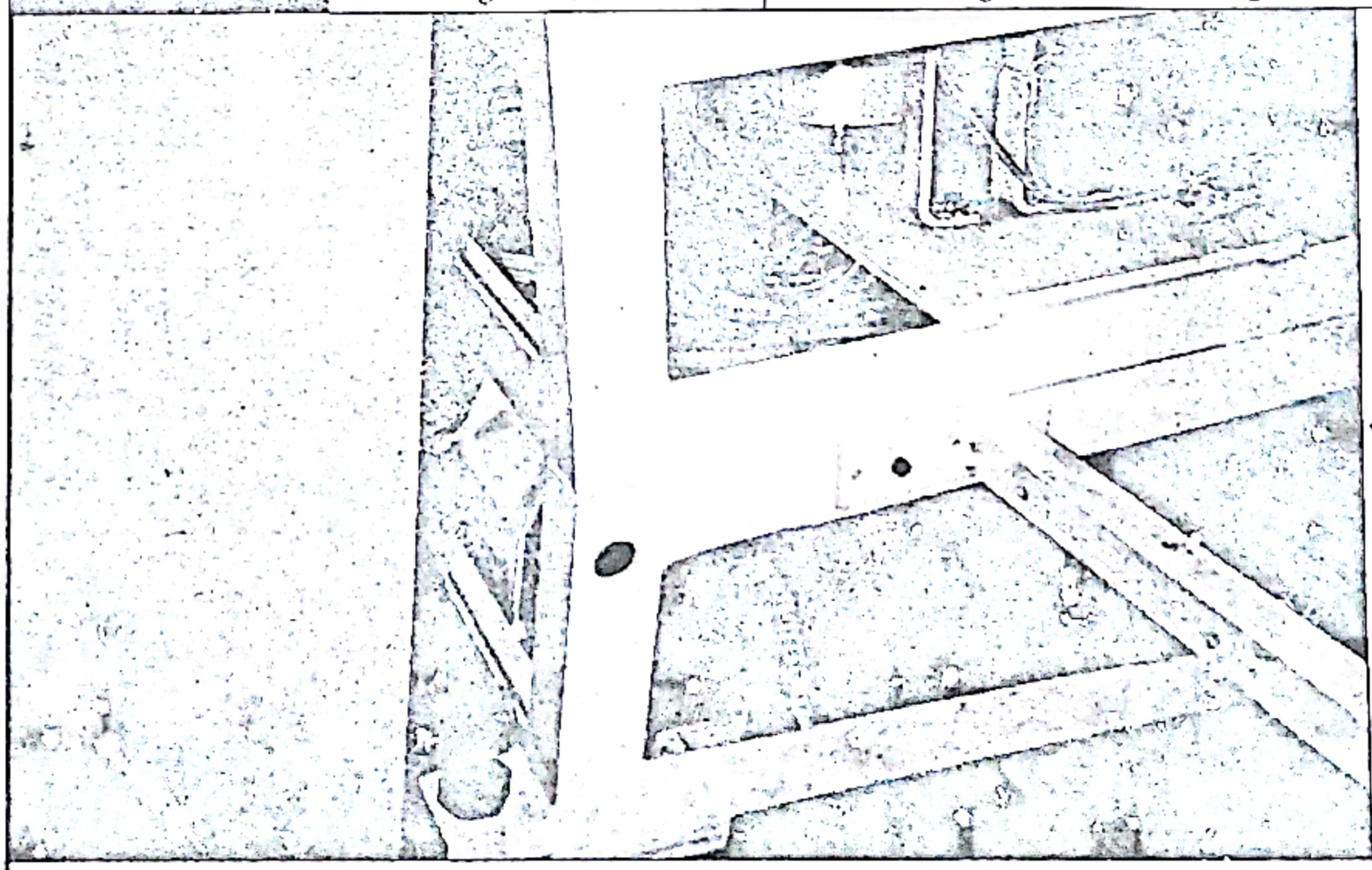
Remarks: Electric cables and hoses are wound round each other in a dangerous way. It doesn't make cleaning any easier either.

4th STAGE

Key point: The original aim has been more or less achieved.

Date: August 28, 1990

Person in charge: Kitahara and Soga



Evaluation: 5 4 3 2 1

Remarks: With the pump out of the way underneath the main unit, it's much less of a danger and the whole area is easier to work in. The thing now is to apply 5S in an ongoing way to keep the area in its present condition.

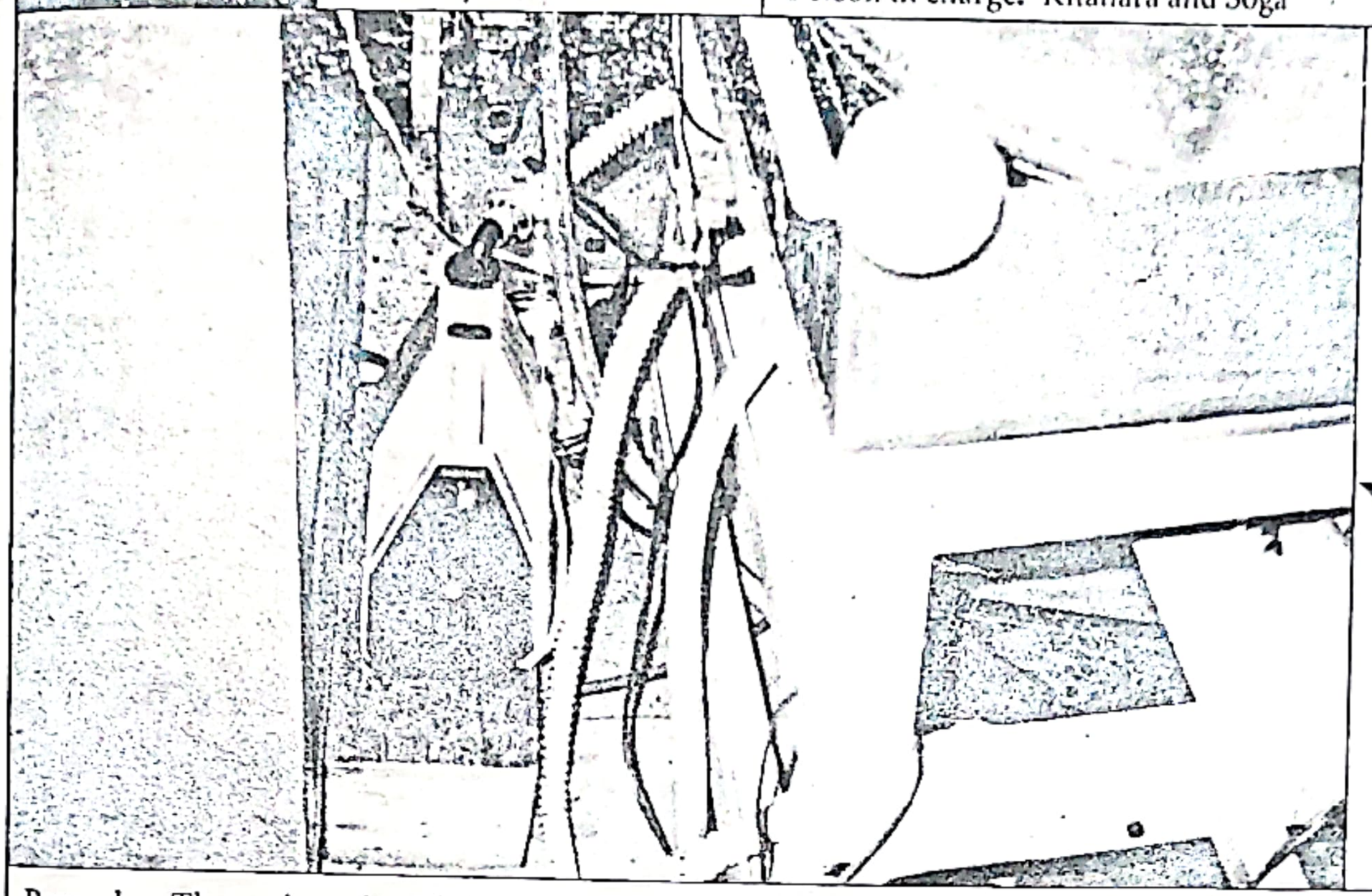
Tokiwa Co., Ltd. Cosmetic Dept.

2nd STAGE

Key point: Only when they came to clean the general area did they start to realize how important it is to have incidental equipment cleared away and organized.

Date: July 30, 1990

Person in charge: Kitahara and Soga



Evaluation	
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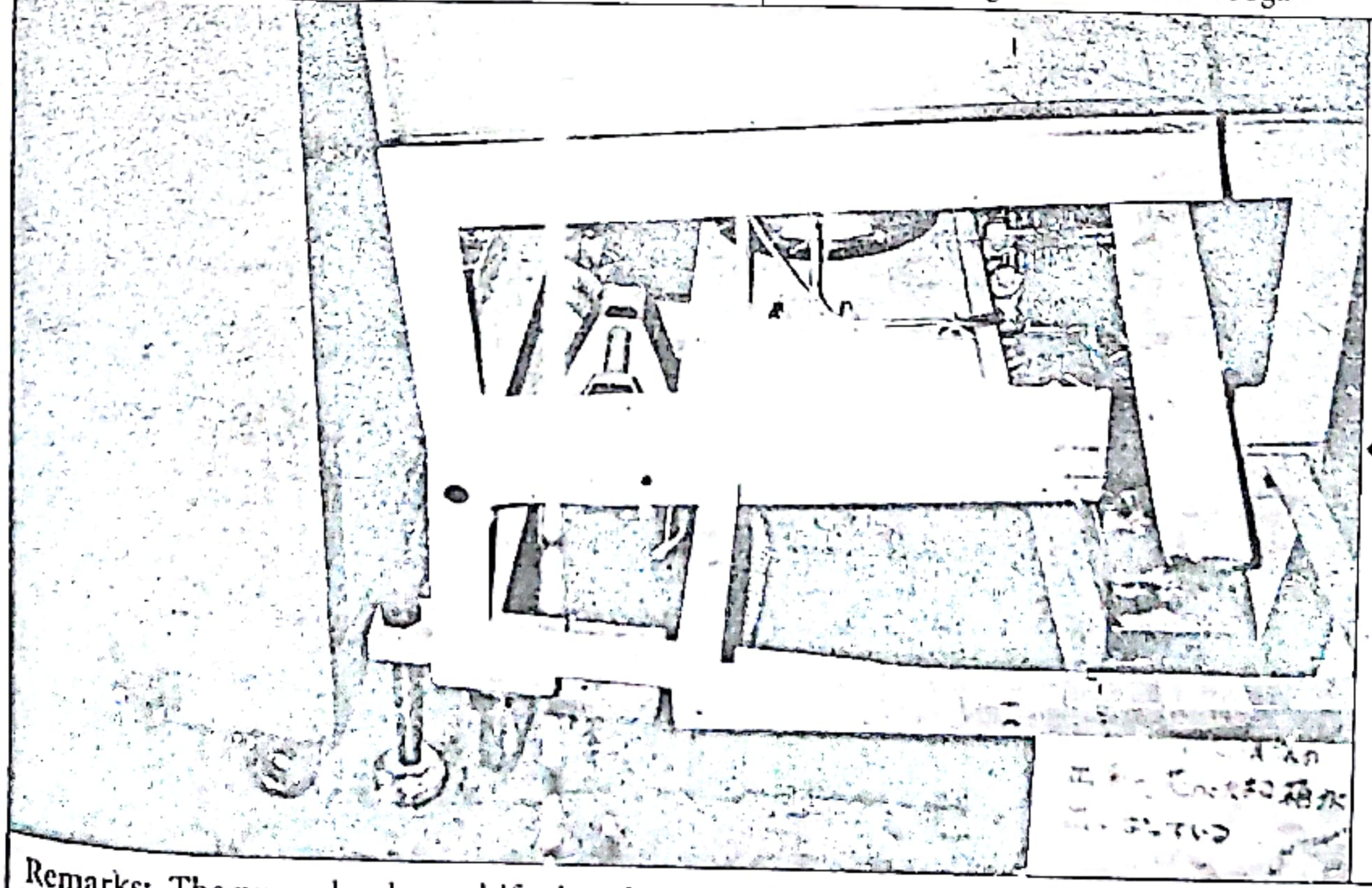
Remarks: The main unit and the coolant tank have been brought closer together, allowing a lot of excess hose to be eliminated.

3rd STAGE

Key point: A start has been made on clearing and reorganizing, starting with a change in the layout of related equipment.

Date: August 10, 1990

Person in charge: Kitahara and Soga



Evaluation	
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Remarks: The pump has been shifted underneath the main unit and the excess hose eliminated. It's starting to look a lot better.

1st STAGE

Target: Cleaning up

Place: Aisle by the wall

Date: September 28, 1990

Person in charge: Operator Group

5 4 3 2 1 Evaluation

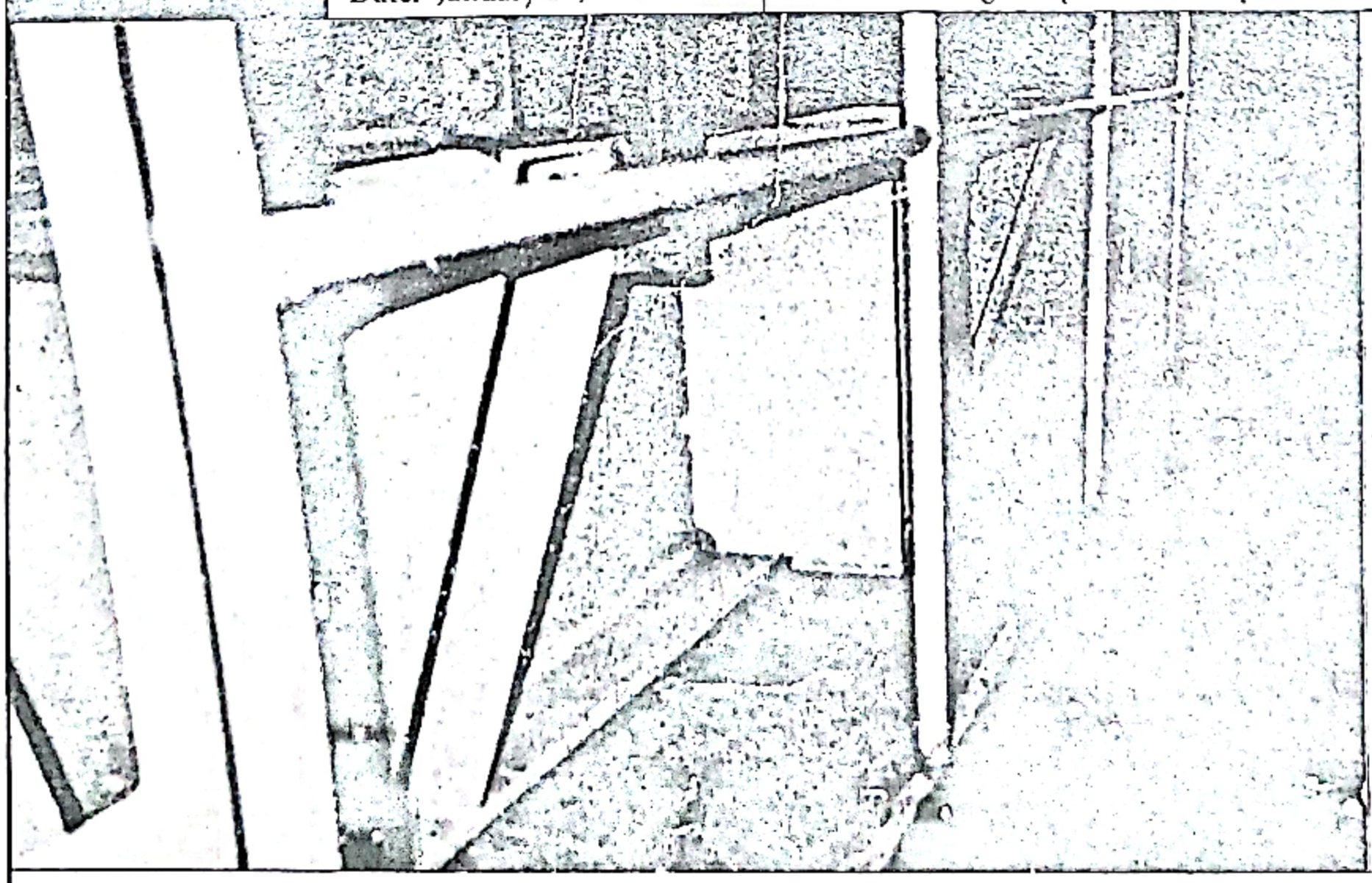
Remarks: This area is always in shadow, hiding the years and years of dirt that had caked up. The photo provided a real surprise, as well as recognition of the need to clean the area.

41h STAGE

Key point: Several years worth of dirt have been removed and the area is finally ready for painting.

Date: January 21, 1991

Person in charge: Operator Group



5 4 3 2 1 Evaluation

Remarks: Now that the aisle has been cleaned and the group has started to paint it, you wouldn't recognize it as the same place. Hurry up and make it the sort of place you don't have to be ashamed of.

2nd STAGE

Key point: Cleaning starts to reveal the original surface of the aisle.

Date: November 27, 1990 | Person in charge: Operator Group

Evaluation
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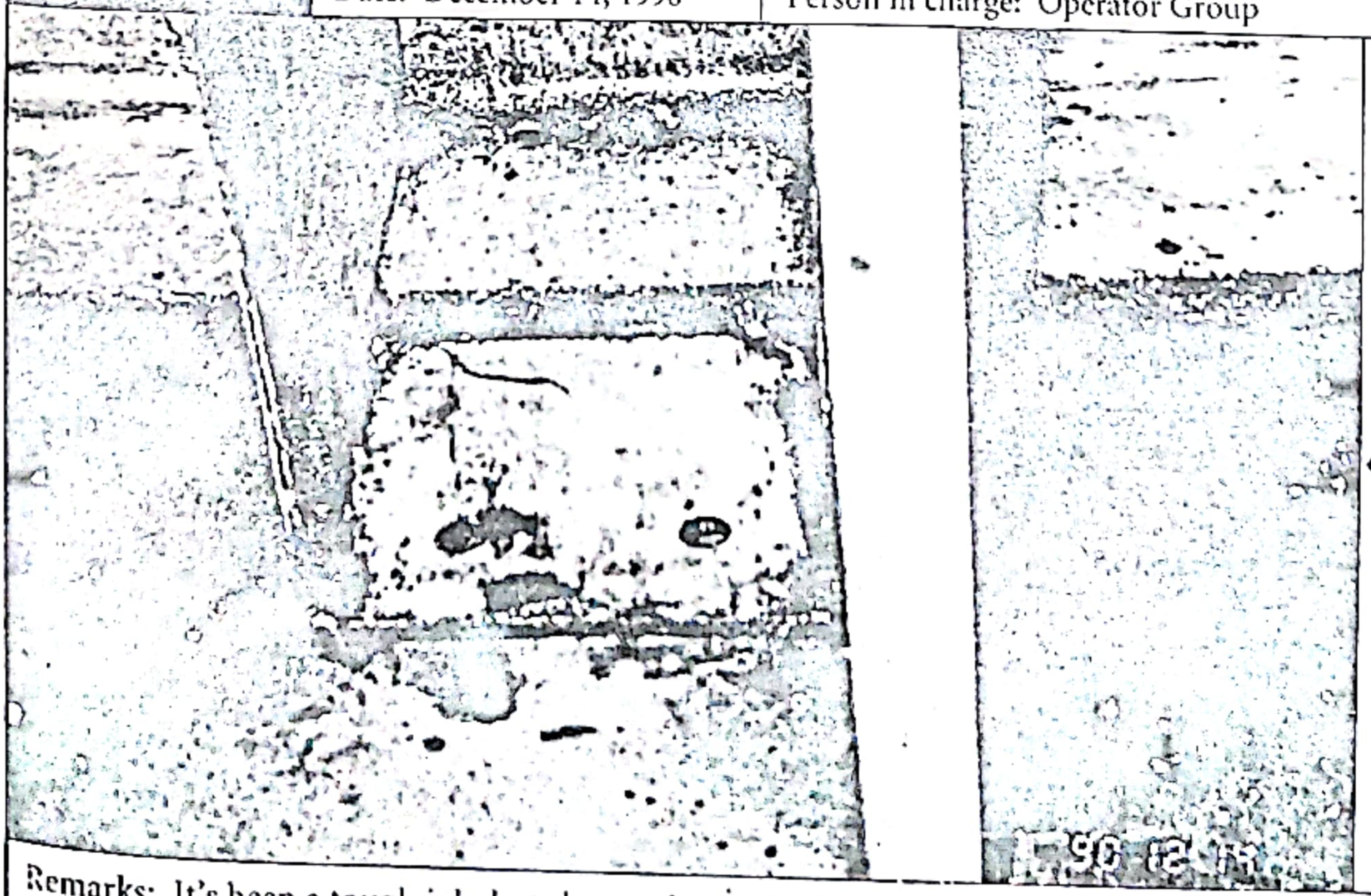
Remarks: The cleanup has turned out to be a pretty big job. There's no choice but to keep working on it.

3rd STAGE

Key point: Working together, the group has cleaned the area again and again.

Date: December 14, 1990 | Person in charge: Operator Group



Evaluation
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Remarks: It's been a tough job, but the results are beginning to show. Just a bit more effort and the area will be ready for a new coat of paint.

07

Illustrated Improvement Examples: III

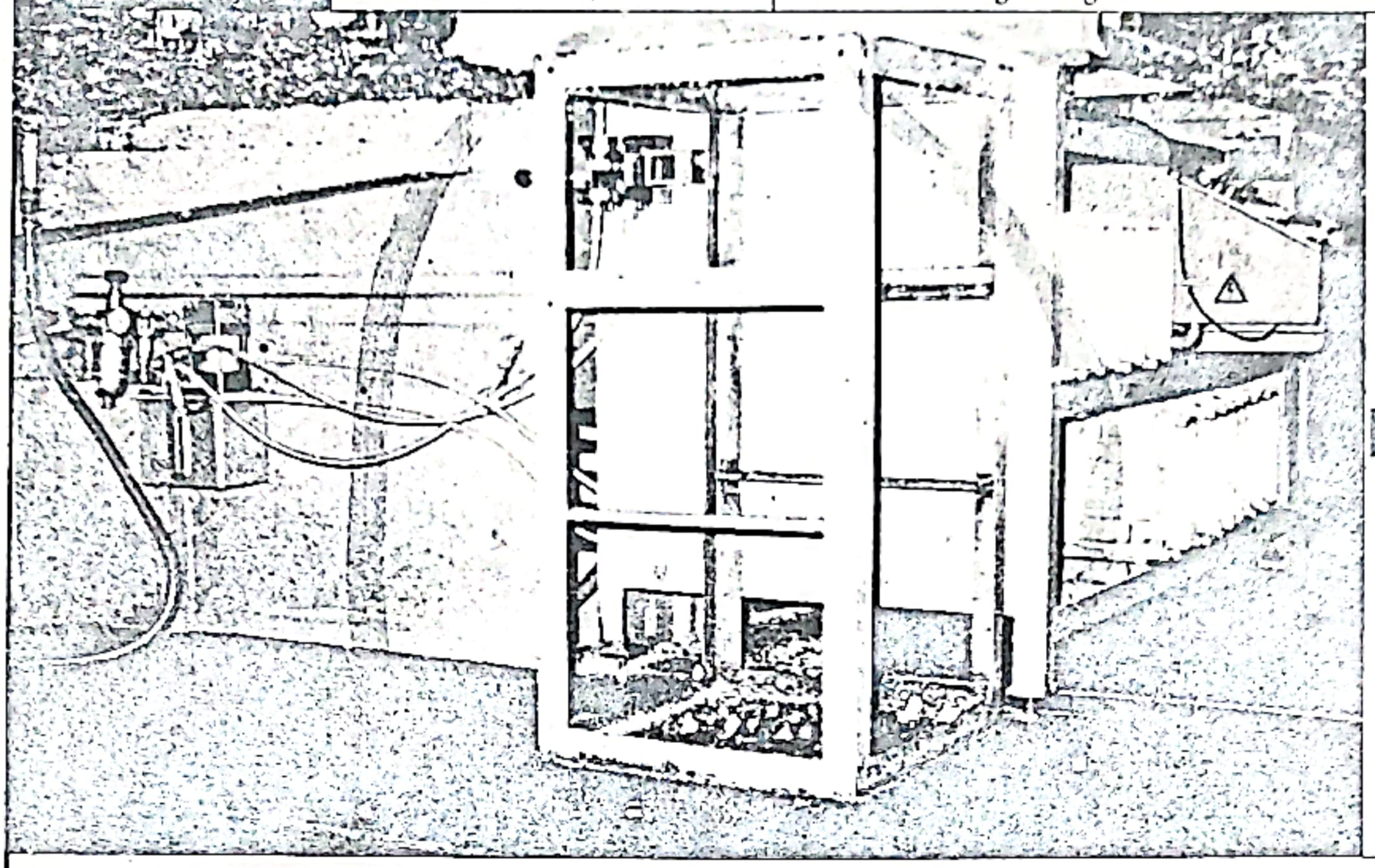
Safety & Improvement

1st STAGE

Target: Dealing with parts that are difficult to clean

Place: Production Section 2

Date: October 18, 1985 | Person in charge: Taguchi



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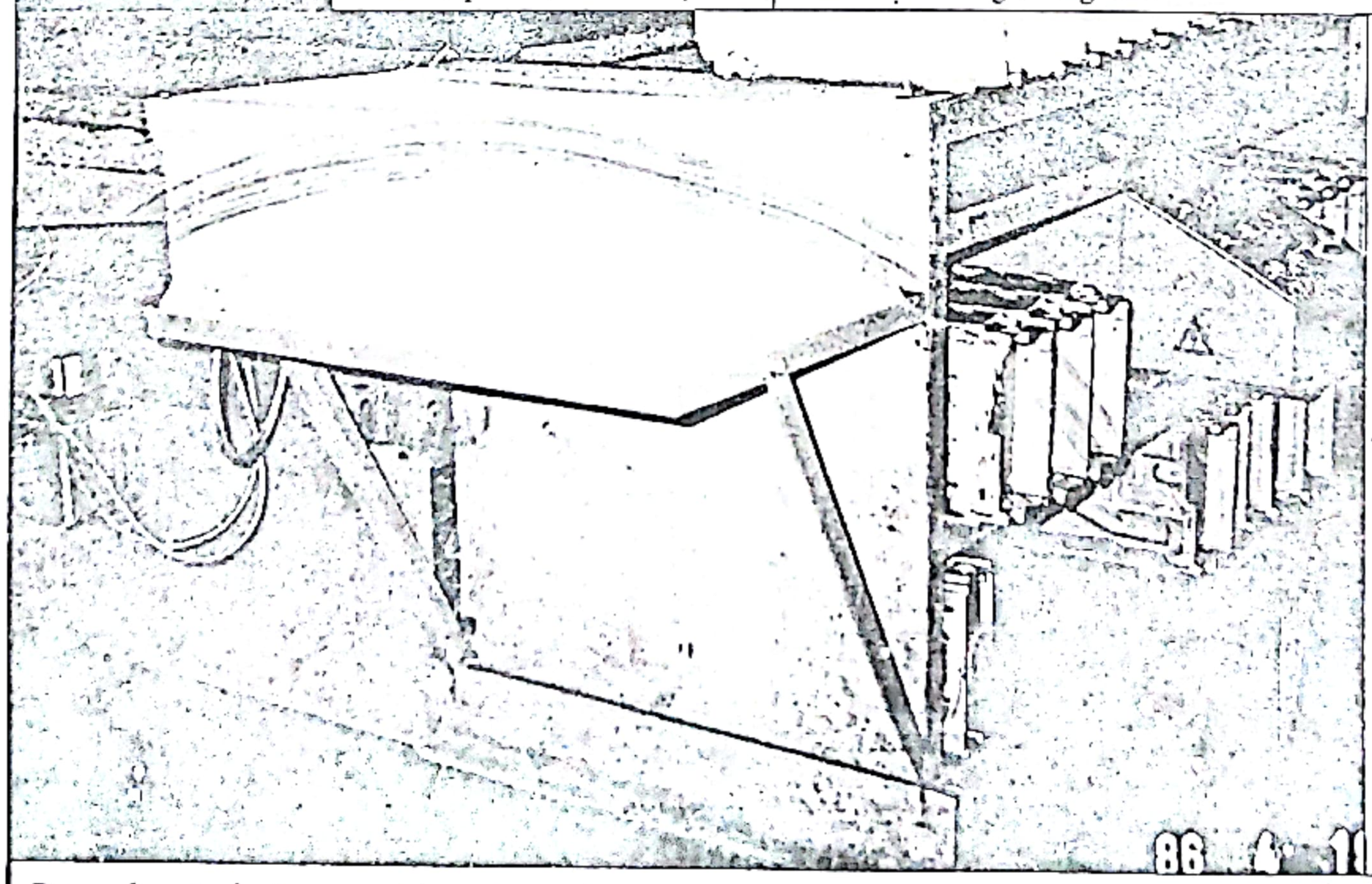
Remarks: The area under the bucket stand is very difficult to clean properly. A better way of cleaning the area needs to be found.

Evaluation

4th STAGE

Key point:

Date: April 19, 1986 | Person in charge: Taguchi



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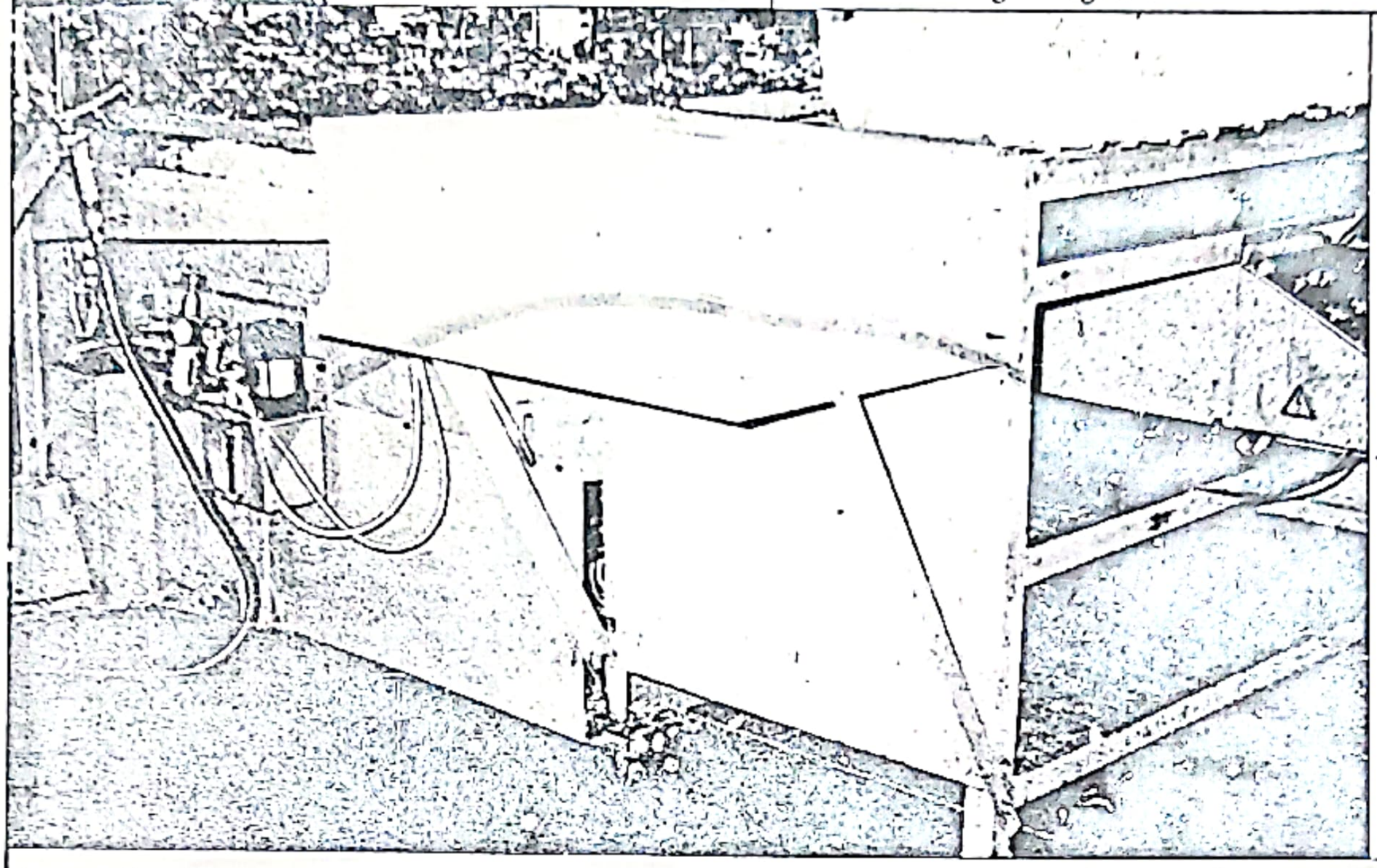
Remarks: Let's do something about the way things are placed on the workbench.

Evaluation

2nd STAGE

Key point: Improving the clearing method for a difficult area

Date: December 14, 1985 | Person in charge: Taguchi



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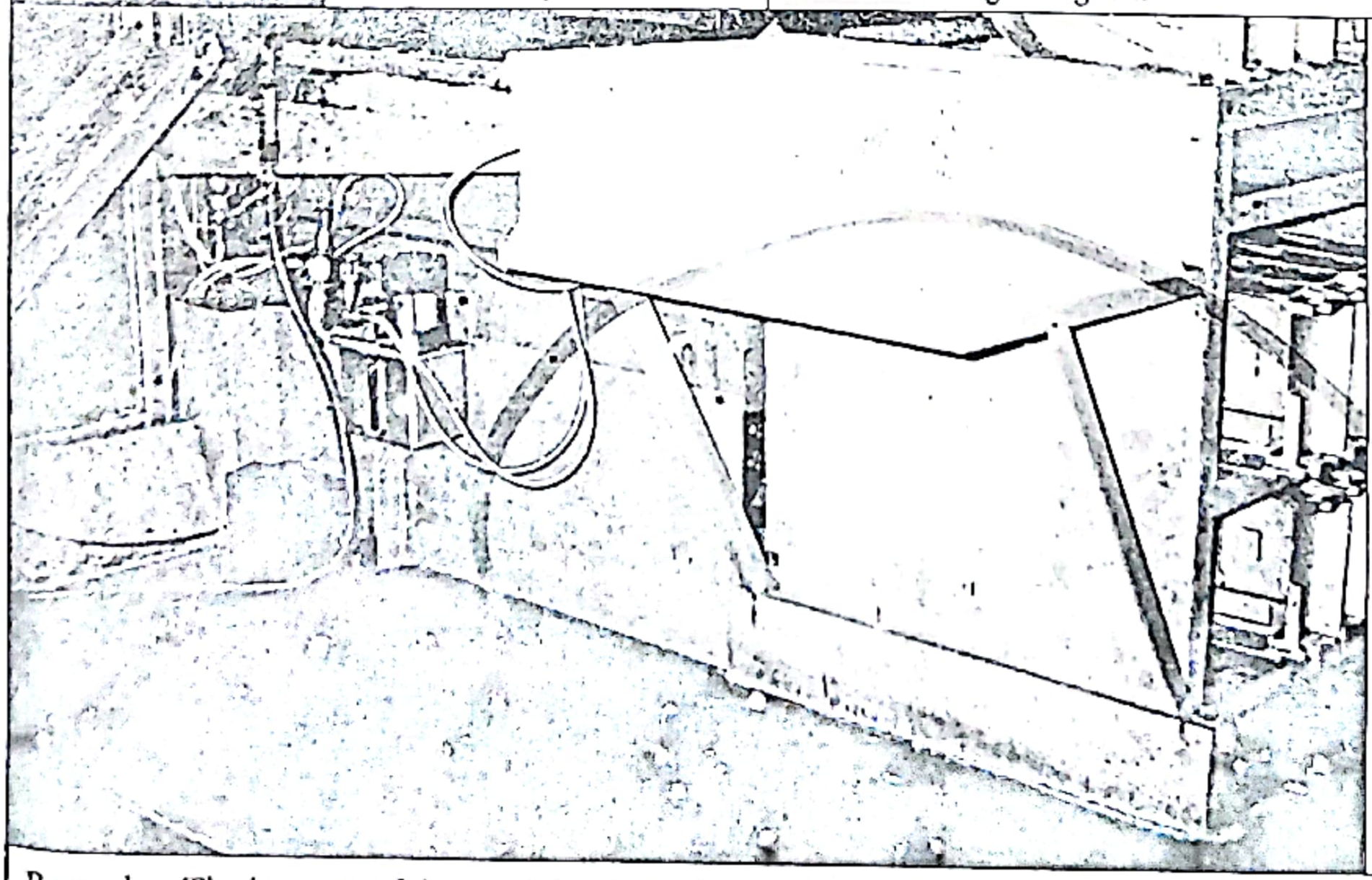
Evaluation

Remarks: The stand has been replaced with a bucket frame, which makes it easier to clean, but the rubbish under the workbench is still difficult to clean out.

3rd STAGE

Key point: Completing the cleaning improvements for a difficult area

Date: February 15, 1986 | Person in charge: Taguchi



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Evaluation

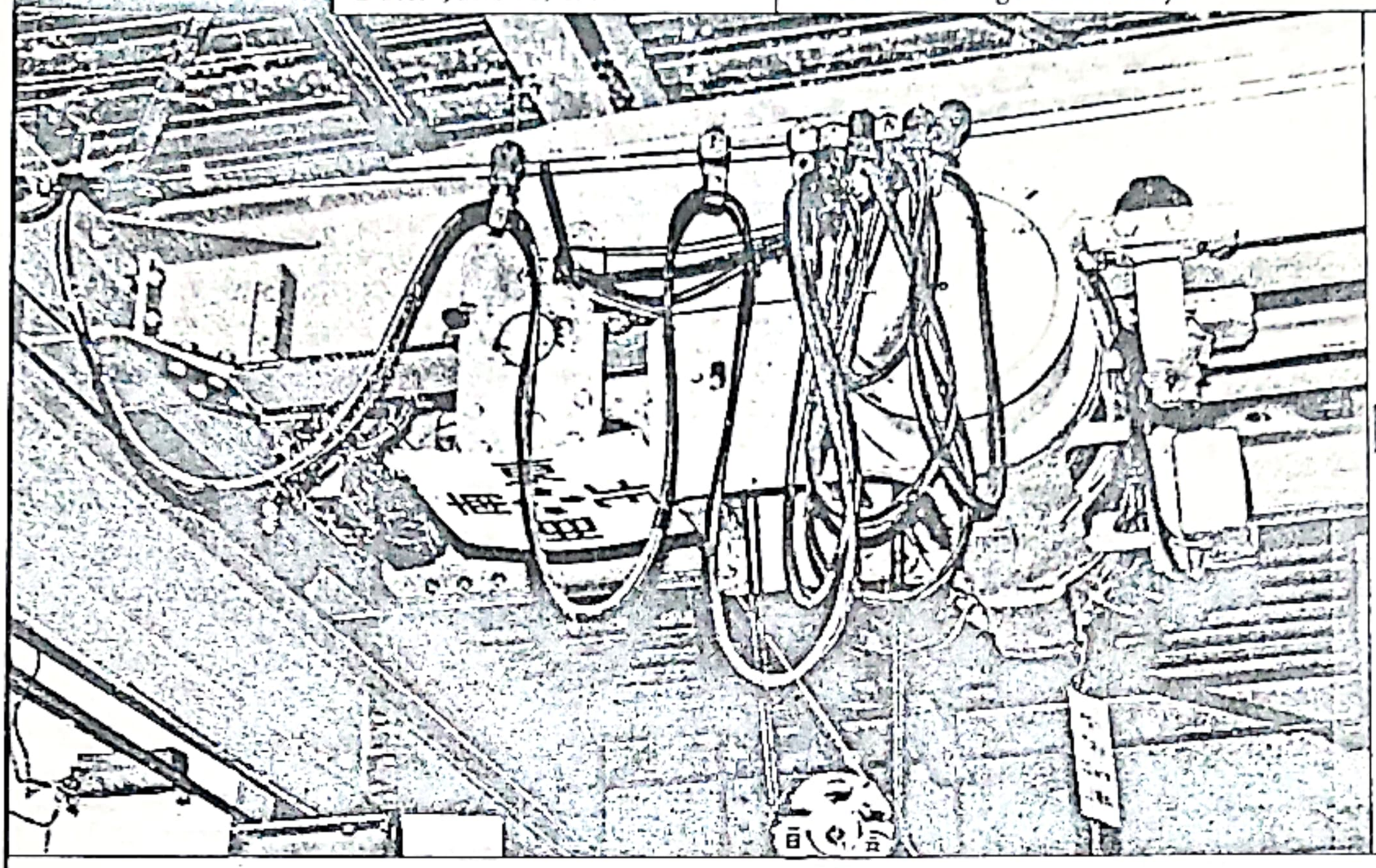
Remarks: The bottom of the workbench has been fitted with a cover to prevent chips and other rubbish slipping under the bench. It is possible to remove the cover if necessary.

1st STAGE

Target: Initial cleaning

Place: Shop crane

Date: June 18, 1991 | Person in charge: Shimobayashi



5 4 3 2 1

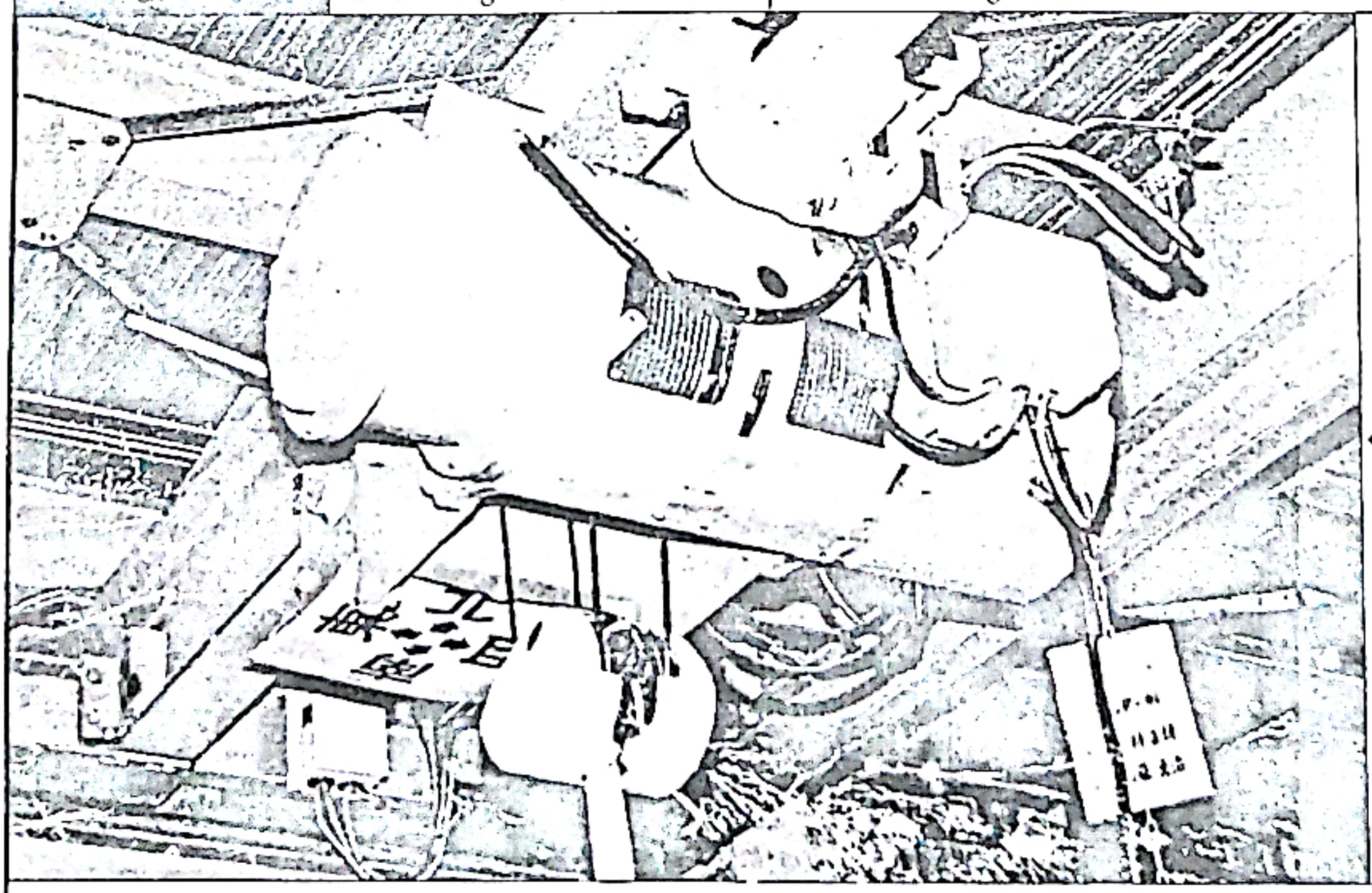
Remarks: This area was noted as being really dirty, and the initial examination also showed that the external cabling presented a safety hazard.

Evaluation

4th STAGE

Key point: The cleaning operation turned into an inspection, and the outcome was an improvement in the safety of the unit.

Date: August 5, 1991 | Person in charge: All the members



5 4 3 2 1

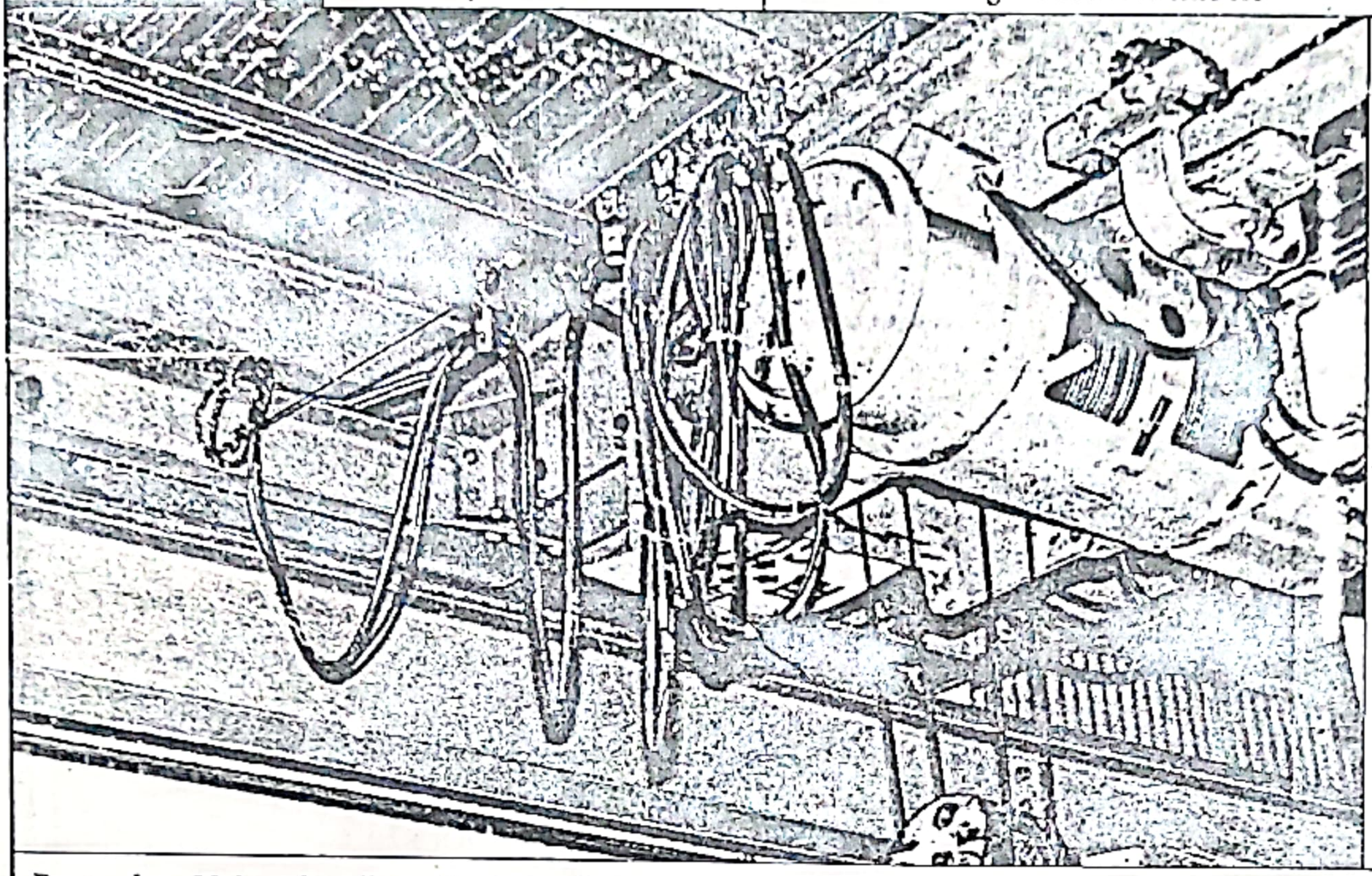
Remarks: When the cleaning was finished, the equipment was painted to make it look better.

Evaluation

2nd STAGE

Key point: Initial cleaning started

Date: July 8, 1991 | Person in charge: All the members



Evaluation
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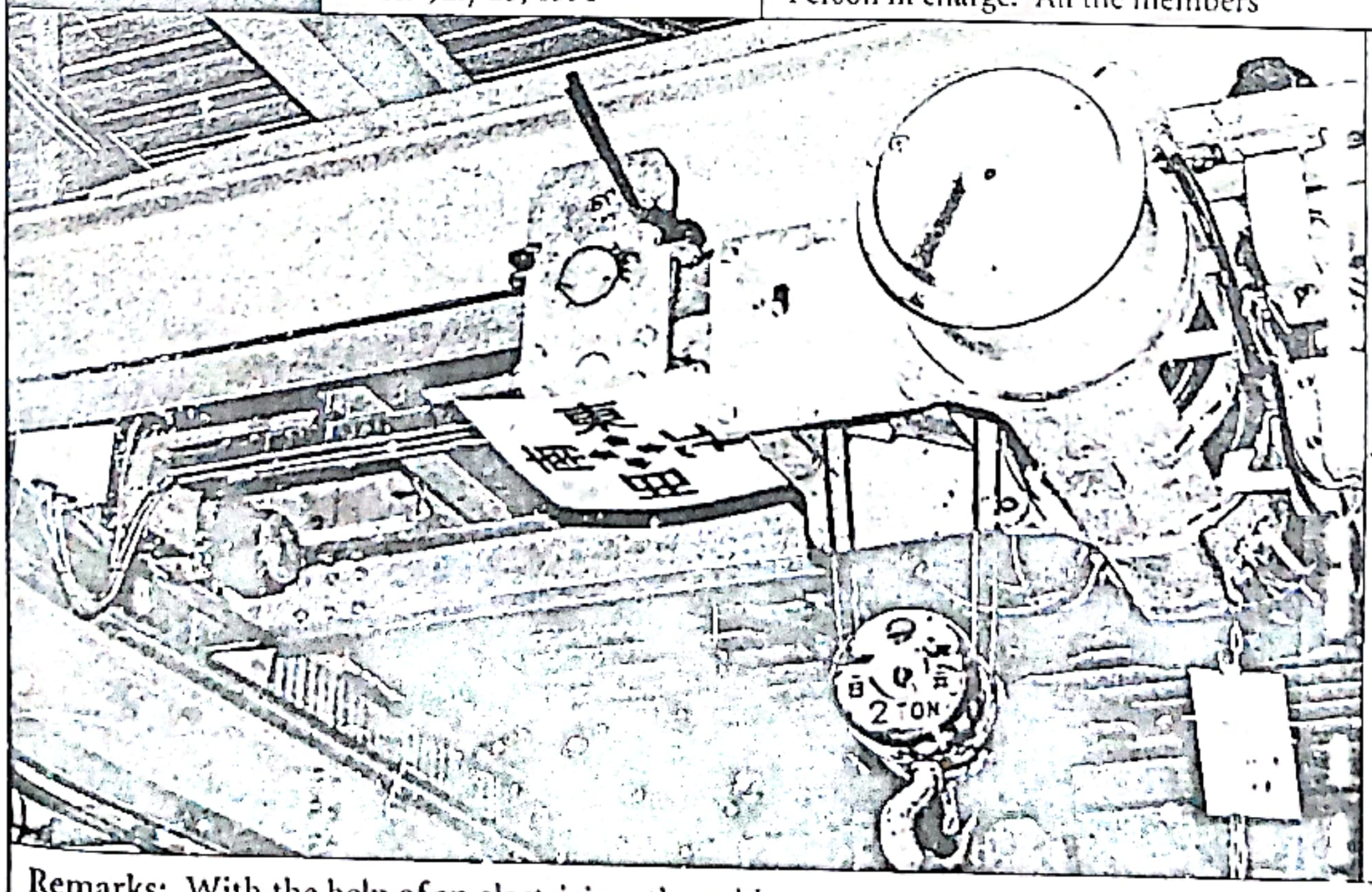
Remarks: Using the allotted TPM activity time, all the staff got to work on cleaning the equipment. Something has got to be done about those cables though.

3rd STAGE

Key point: The cable arrangement has been improved.

Date: July 23, 1991 | Person in charge: All the members



Evaluation
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Remarks: With the help of an electrician, the cables were strung together and run inside a cover.

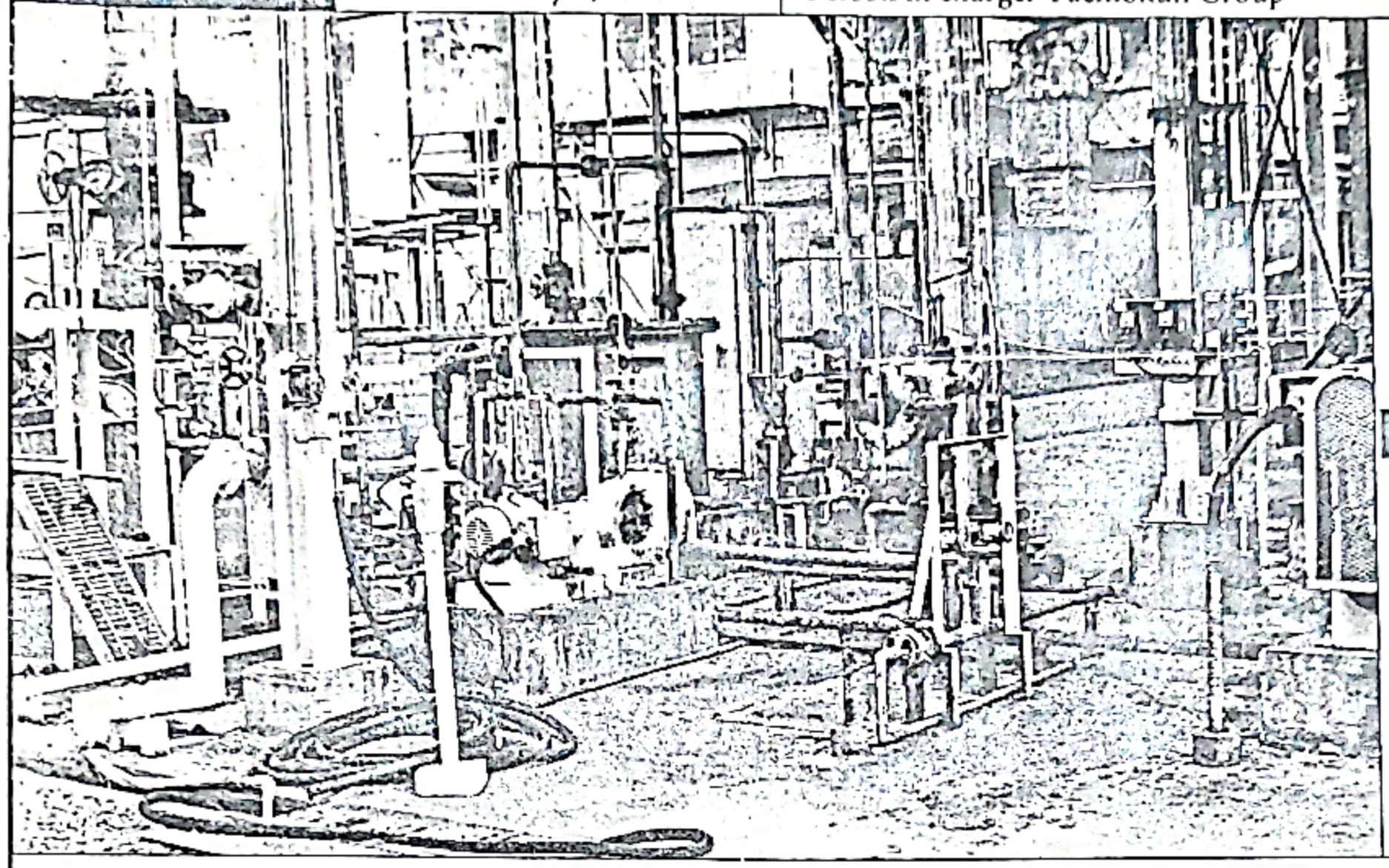
1st STAGE

Target: Clearing unnecessary hoses off the floor and making it safer for walking

Place: EMG process close to the Cl2 sealing fluid tank

Date: February 1, 1989

Person in charge: Pachiokun Group



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Evaluation

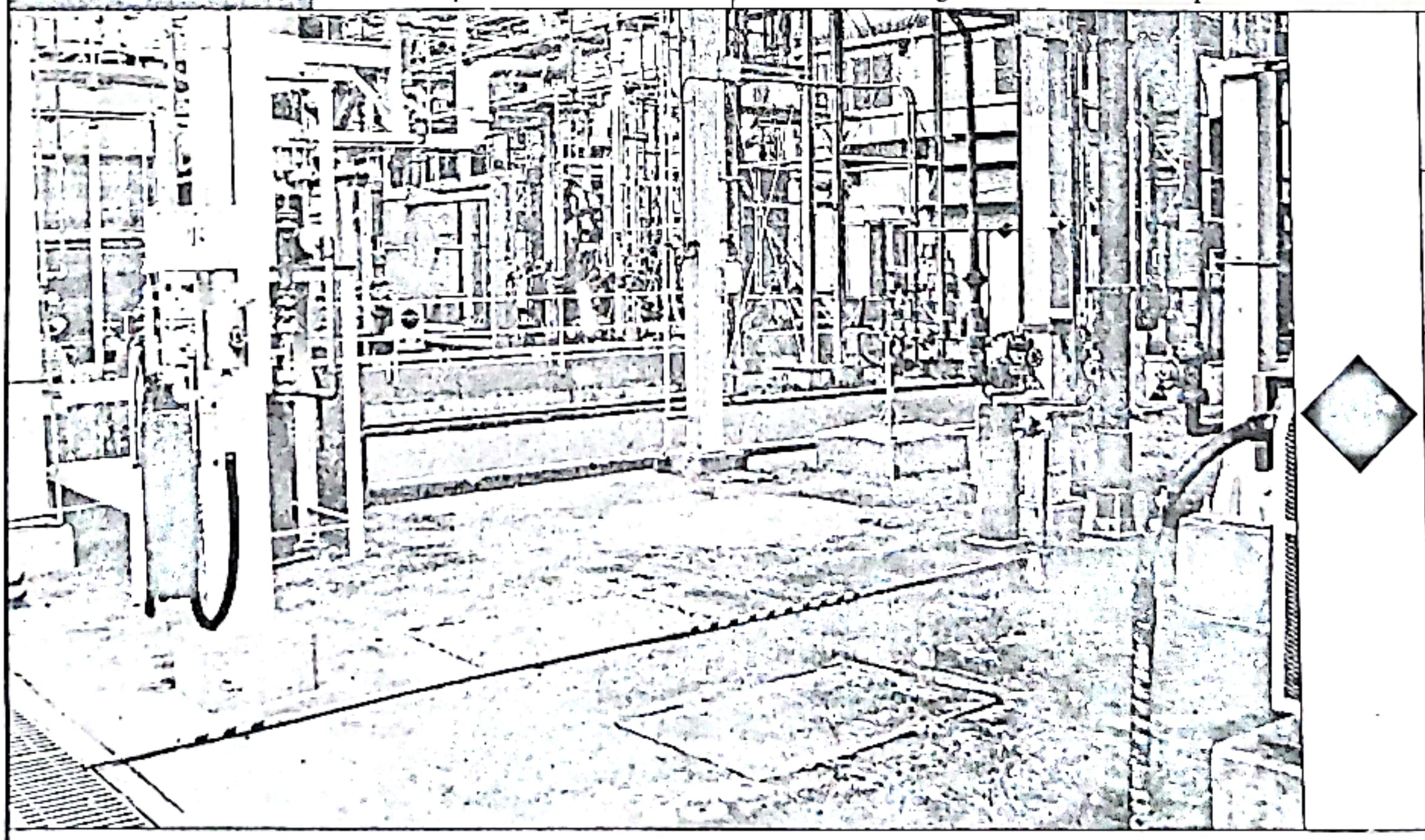
Remarks: Corrosion and the numerous hoses on the ground constitute safety hazards. Something will have to be done.

4th STAGE

Key point: The unnecessary equipment has been removed and the floor is safe to walk on again. (It's taken two and a half years to get to this stage)

Date: July 18, 1991

Person in charge: Pachiokun Group



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Evaluation

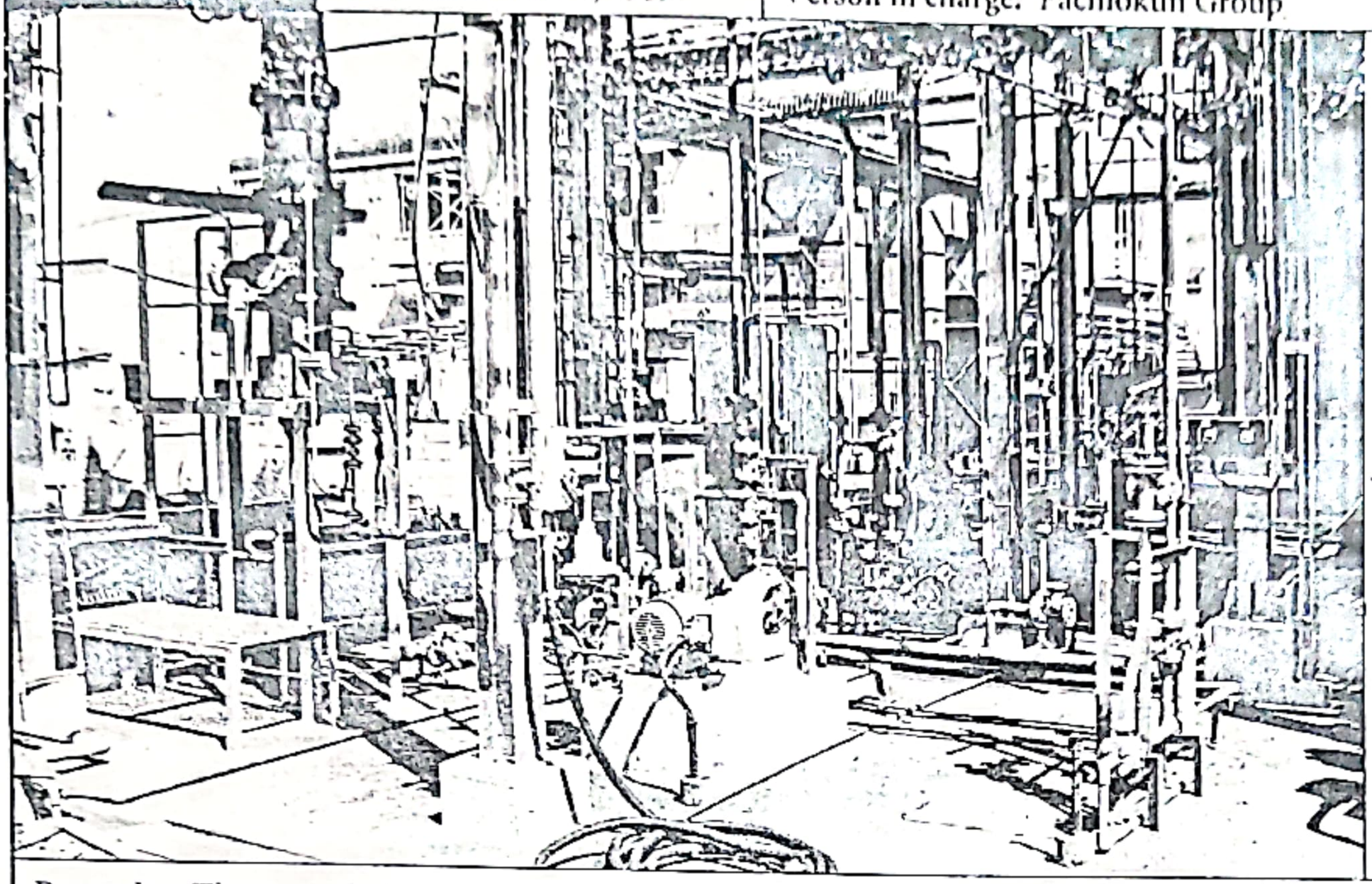
Remarks: The whole area looks much brighter now, and it's easier to monitor too.

2nd STAGE

Key point: The whole staff set to work removing rust up to a standard distance of 1.7m from the struts, and painting to prevent further corrosion. At the same time, the unneeded hosing was tidied away.

Date: November 1, 1989

Person in charge: Pachiokun Group



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Evaluation

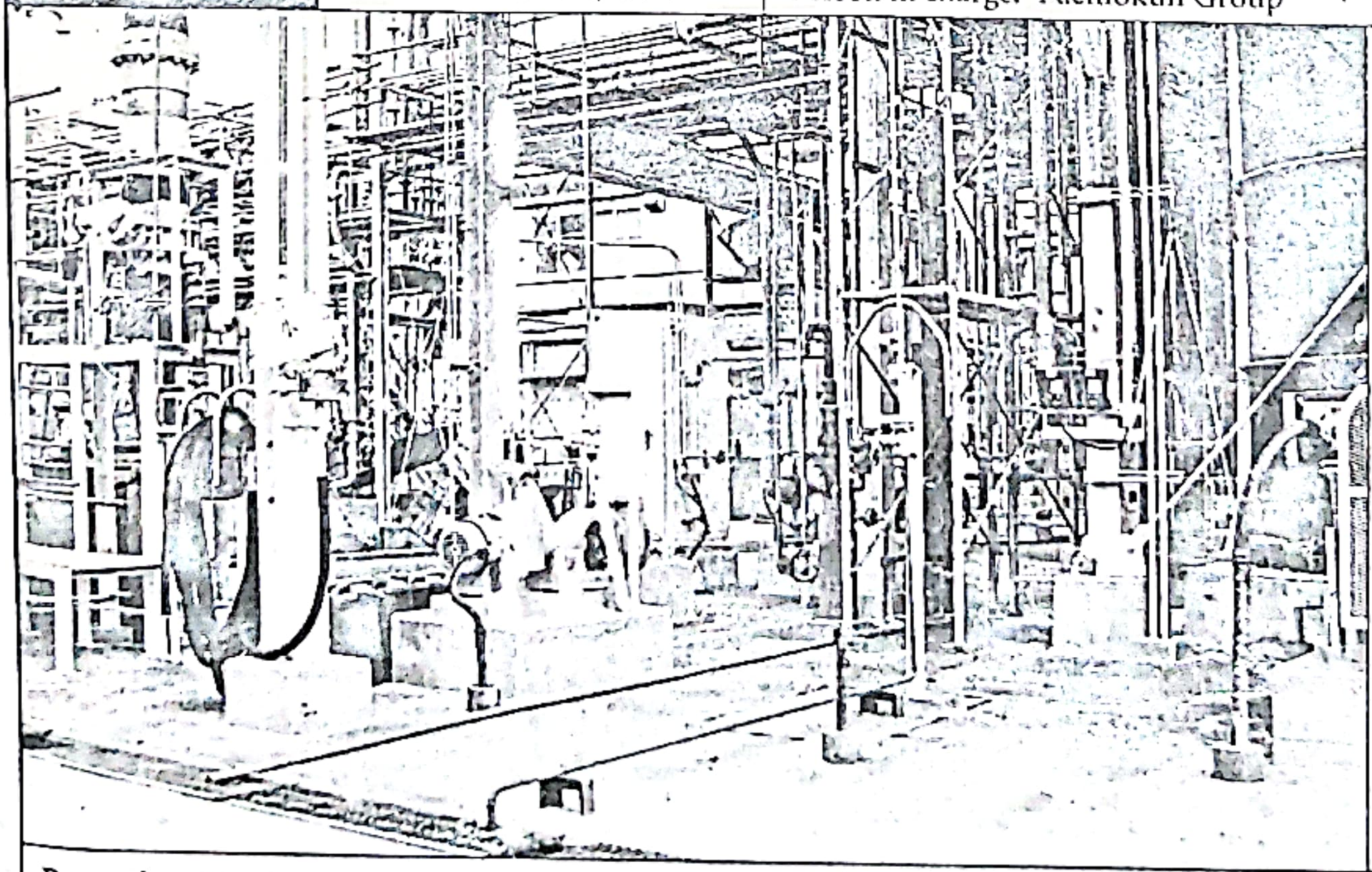
Remarks: The corroded areas look much better for painting but something still needs to be done with the cluttered floor.

3rd STAGE

Key point: Unnecessary hose length was cut off. Positive self-maintenance has made the plant look much better.

Date: November 1, 1990

Person in charge: Pachiokun Group



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Evaluation

Remarks: The floor's starting to look much clearer and arrangements have been made for stowing the water hoses.

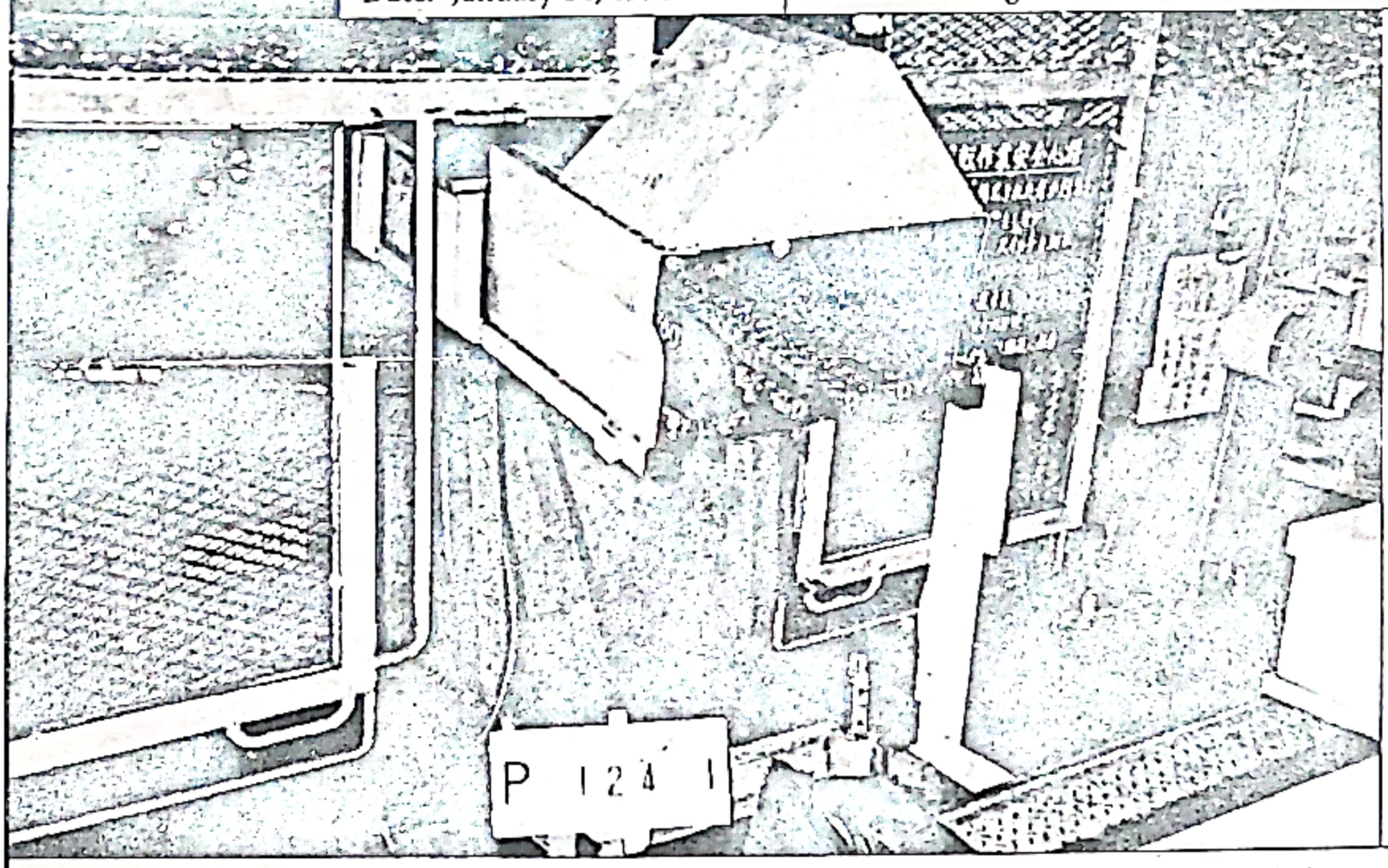
1st STAGE

Target: Improving the safety and look of the area

Place: Area around press No.4-2

Date: January 14, 1991

Person in charge: Leader Inaba



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Evaluation

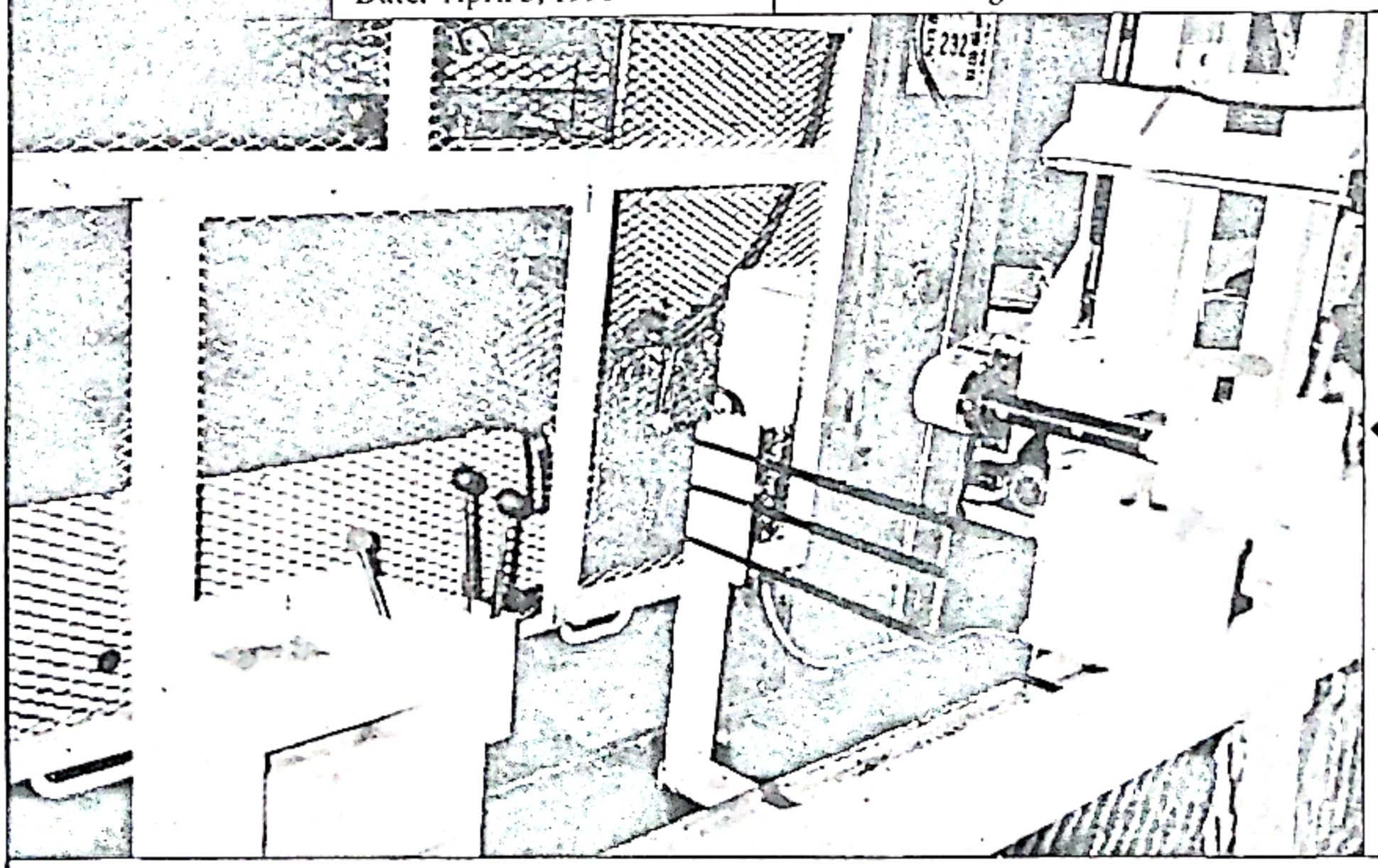
Remarks: Sort out what's needed and what isn't, plan what you are going to do and then carry your plan out methodically.

4th STAGE

Key point: The upper cover was found to be unnecessary and was removed, making the place safer and improving its appearance.

Date: April 5, 1991

Person in charge: Leader Inaba



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Evaluation

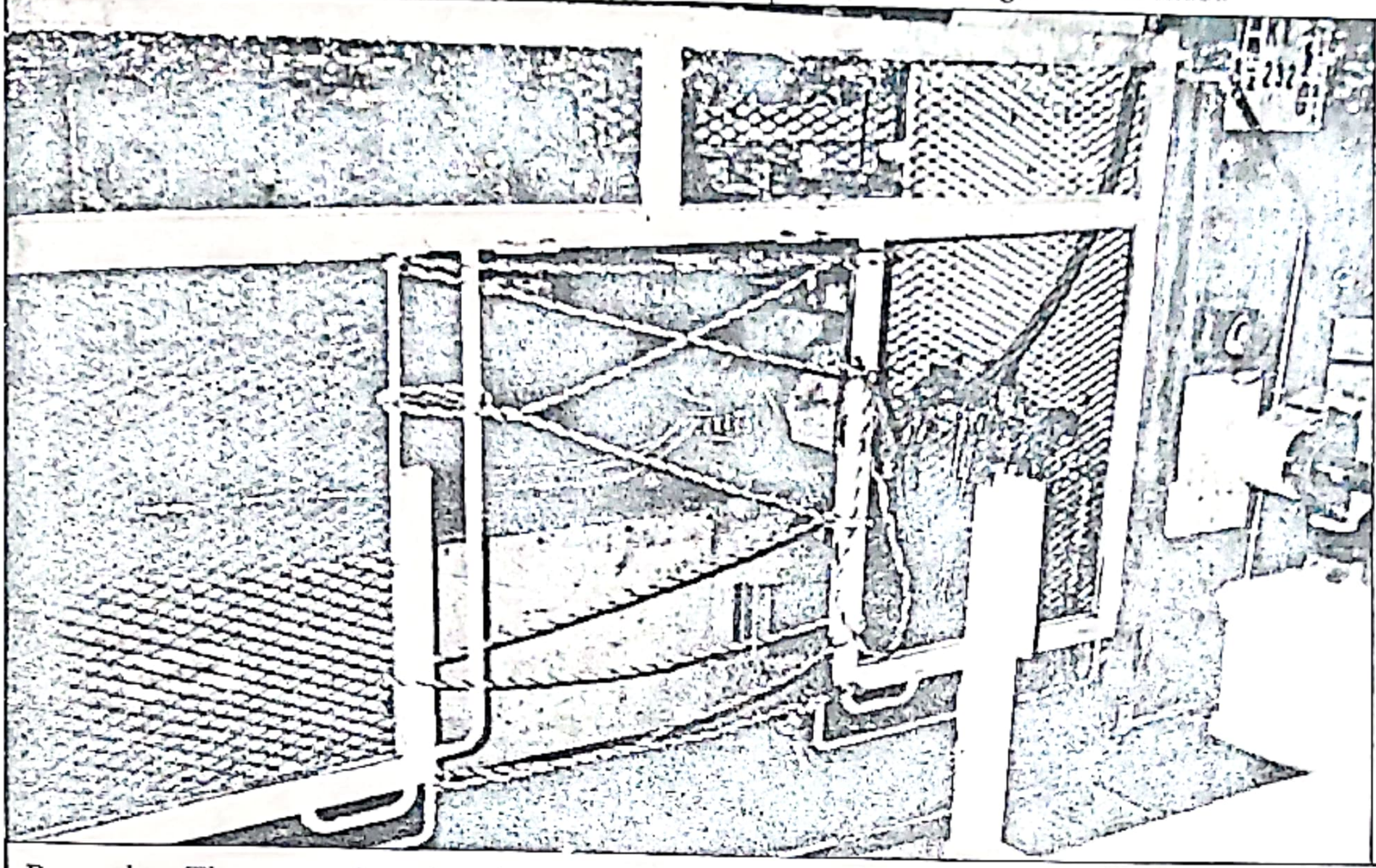
Remarks: Double-check to make sure all the points in the plan have been covered. Next, think about the maintenance requirements and consider the possibility of extending the same treatment to neighboring processes.

2nd STAGE

Key point: These measures may only be temporary, but the team needs to keep its sights clearly on target.

Date: February 25, 1991

Person in charge: Leader Inaba



Evaluation
5
4
3
2
1

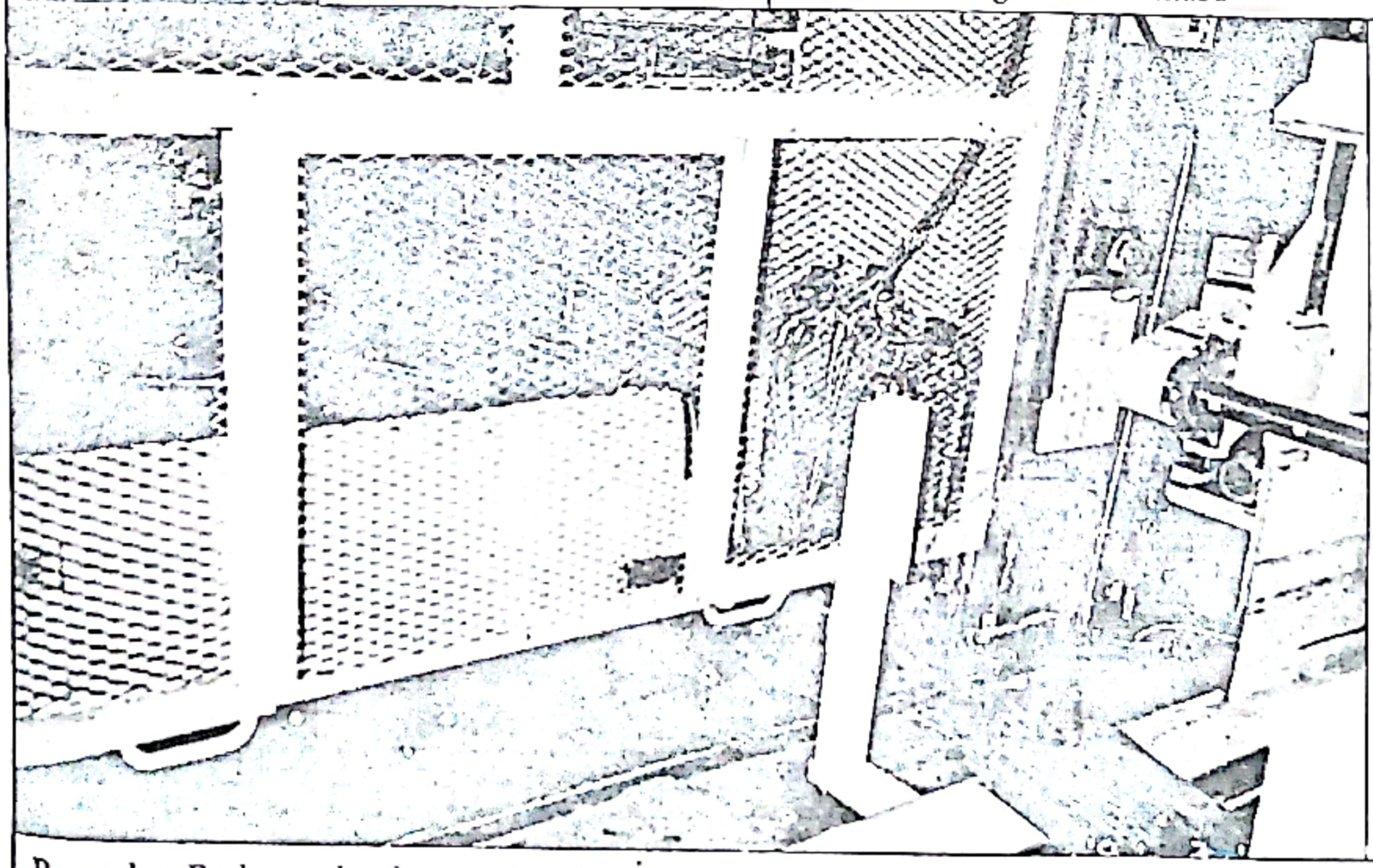
Remarks: The scrap chute has been removed and the open end made temporarily safe with rope. Those responsible need to act quickly to get the opening covered by a proper grill of some sort.

3rd STAGE

Key point: Netting has been used to make the opening safe and improve the look of the area.

Date: March 5, 1991

Person in charge: Leader Inaba



Evaluation
5
4
3
2
1

Remarks: Each part has been painted, but make sure there is no paint on the floor. Something also needs to be done to stop the oil leaks.

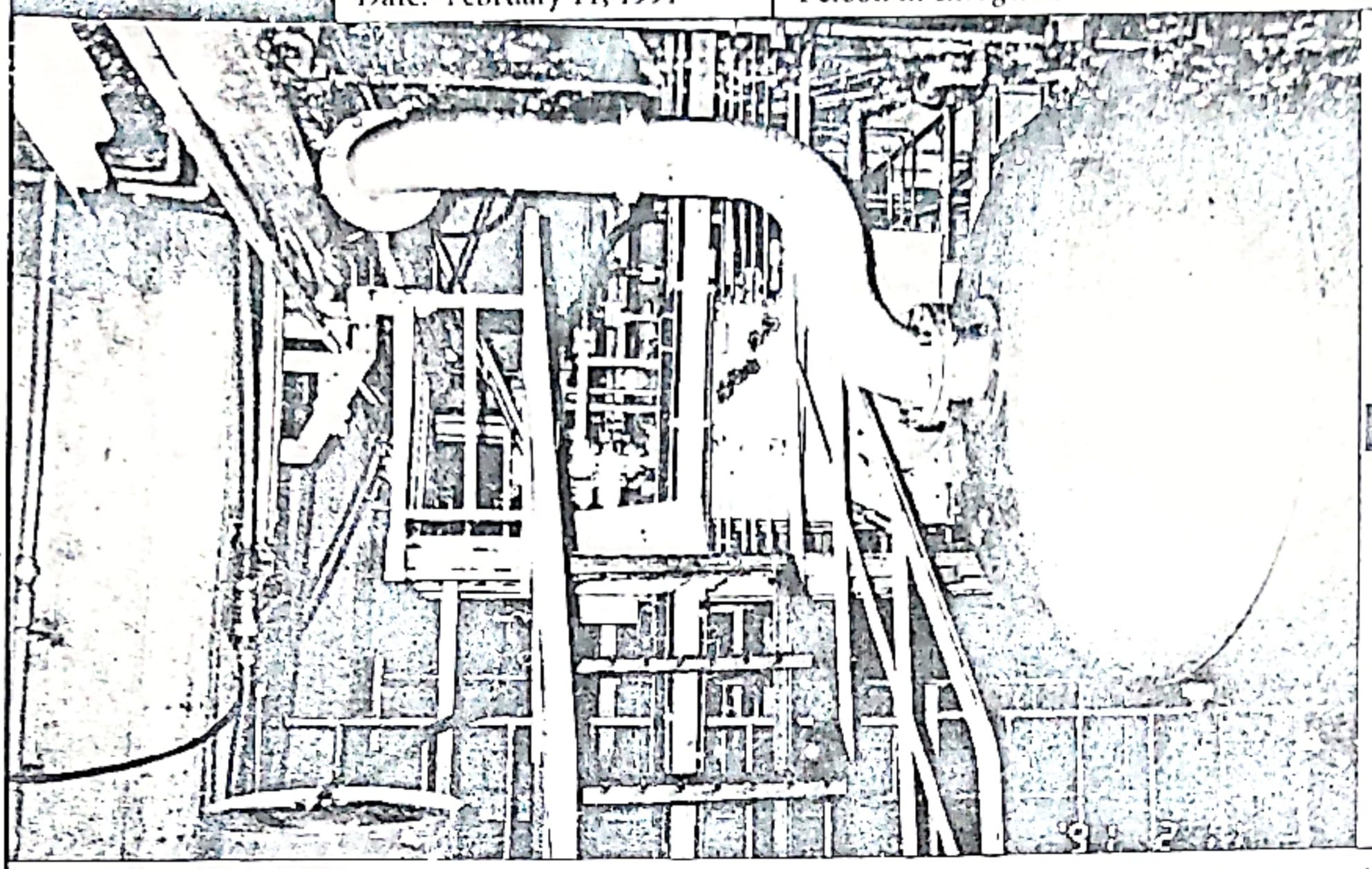
1st STAGE

Target: Implementing 5S and improving plant safety

Place: Underground air tank under press B1

Date: February 11, 1991

Person in charge: Okada



5
4
3
2
1
Evaluation

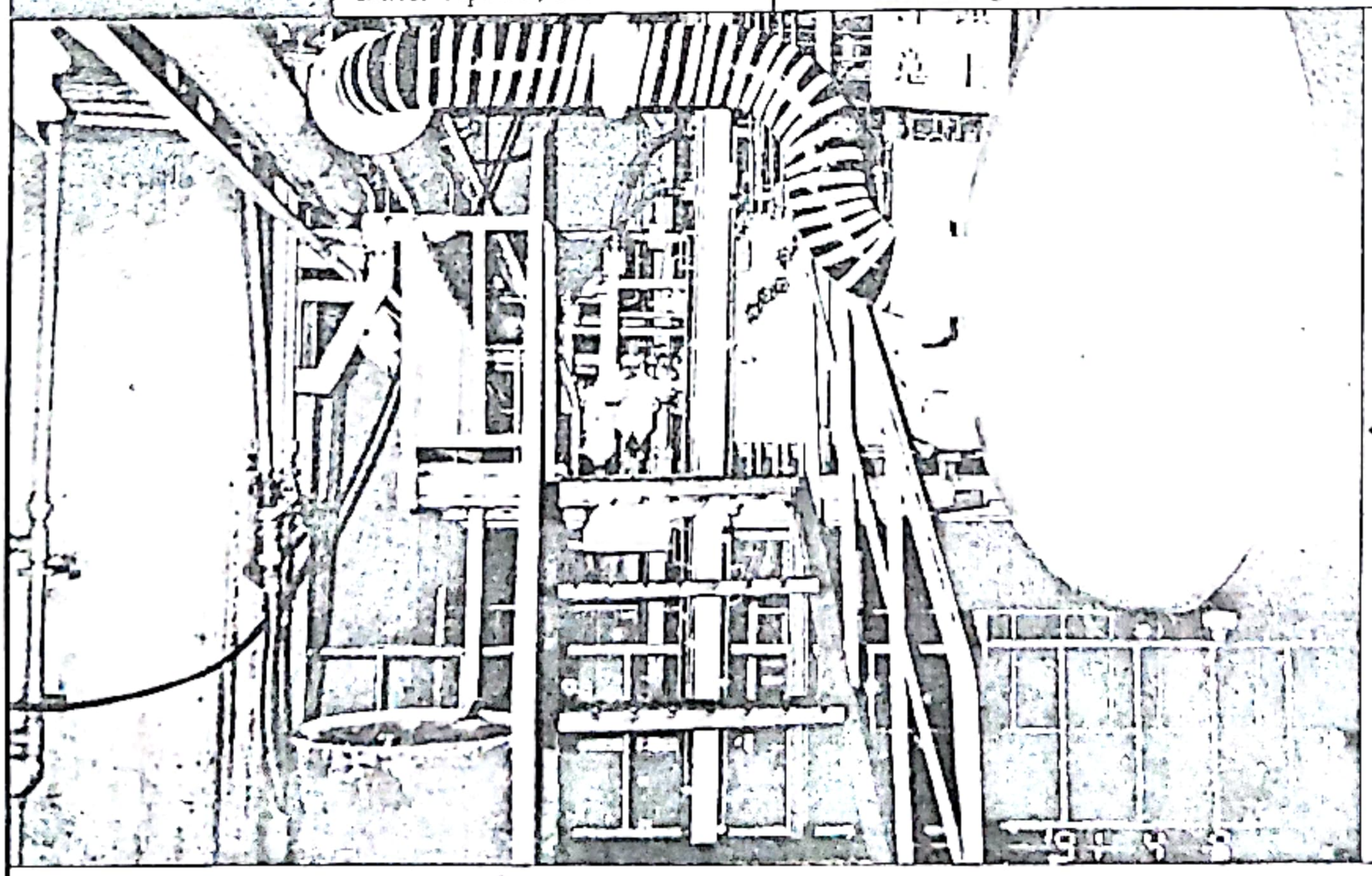
Remarks: Think about the safety aspects of walking up the ladder and carry out 5S. Then discuss what needs to be done, how it needs to be done and when.

4th STAGE

Key point: This shows what can be done by repeatedly taking photographs of an area which isn't changing but which could easily be changed, given the right sort of effort.

Date: April 9, 1991

Person in charge: Okada



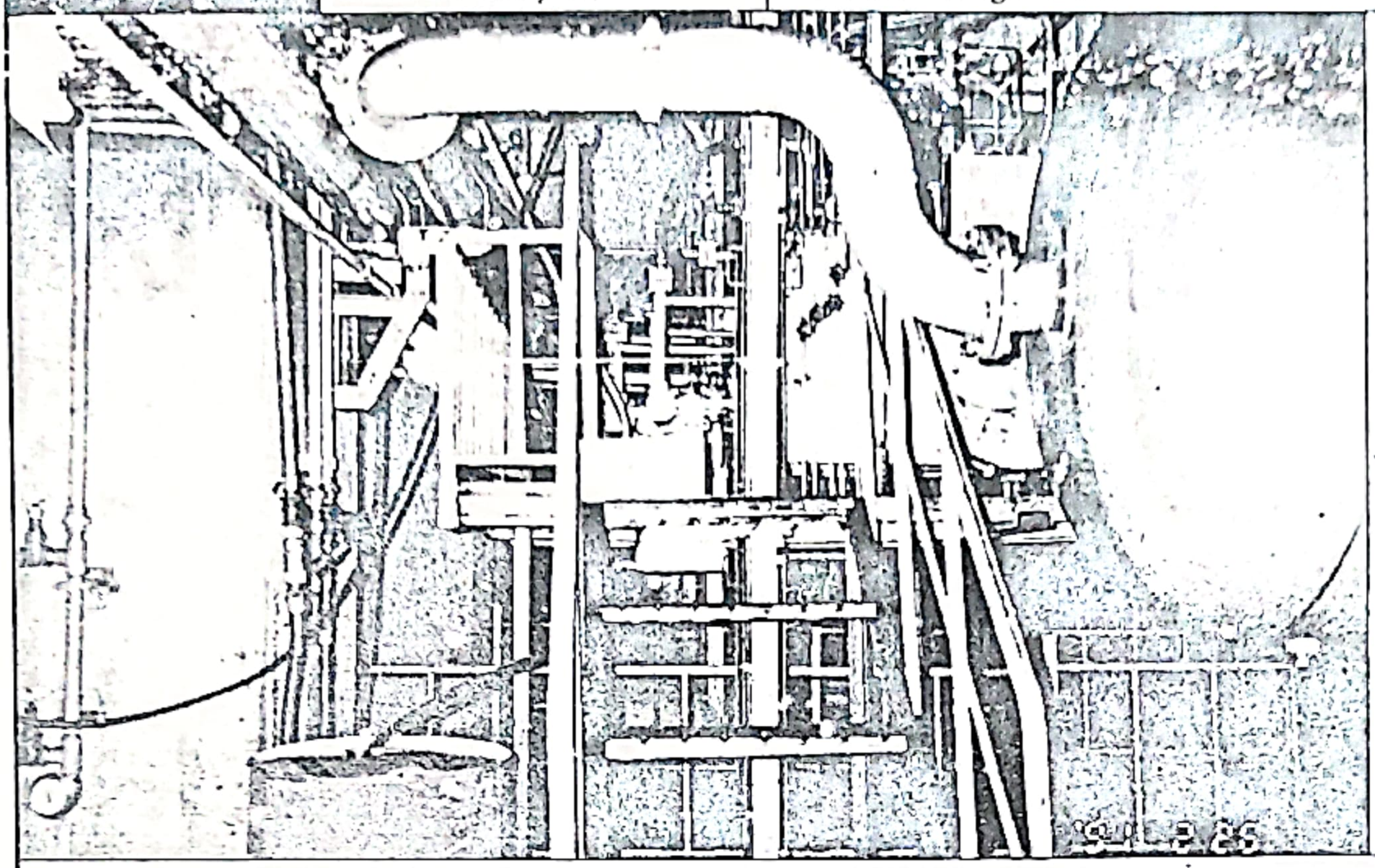
5
4
3
2
1
Evaluation

Remarks: Improvements have finally been carried out within the deadline. The overhead piping to the tank has been given a striped finish which makes it easier to see and, therefore, safer. What about painting the ladder's steps?

2nd STAGE

Key point: To be frank, the photo shows quite clearly that nothing has been done.

Date: February 26, 1991 | Person in charge: Okada



5
4
3
2
1

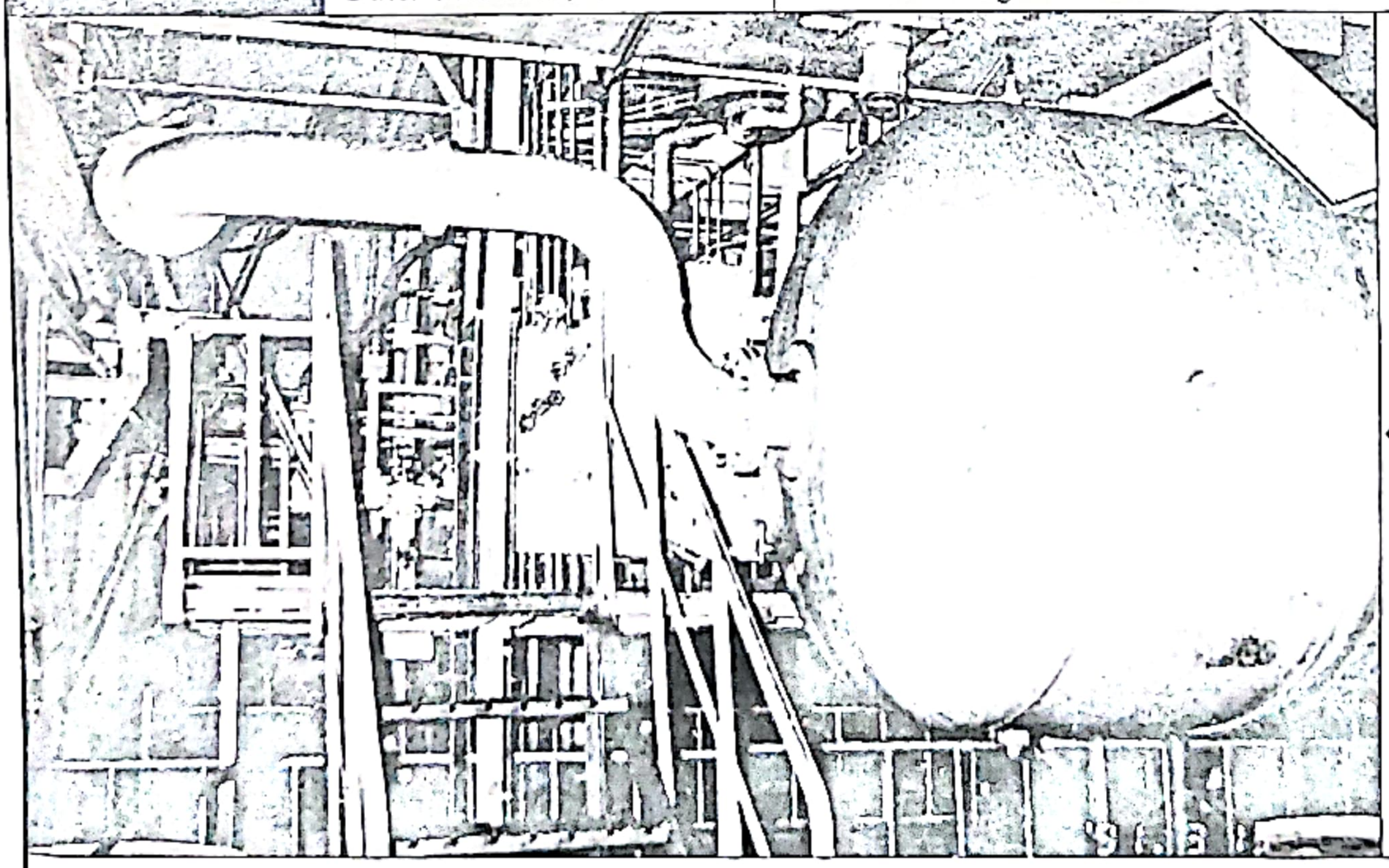
Remarks: It's been two weeks since the first photo was taken and still nothing has been done. It is time for everyone to get their heads together and work out a positive plan of action.

Evaluation

3rd STAGE

Key point: Photos that show no change serve a useful purpose in motivating operators to make improvements.

Date: March 13, 1991 | Person in charge: Okada



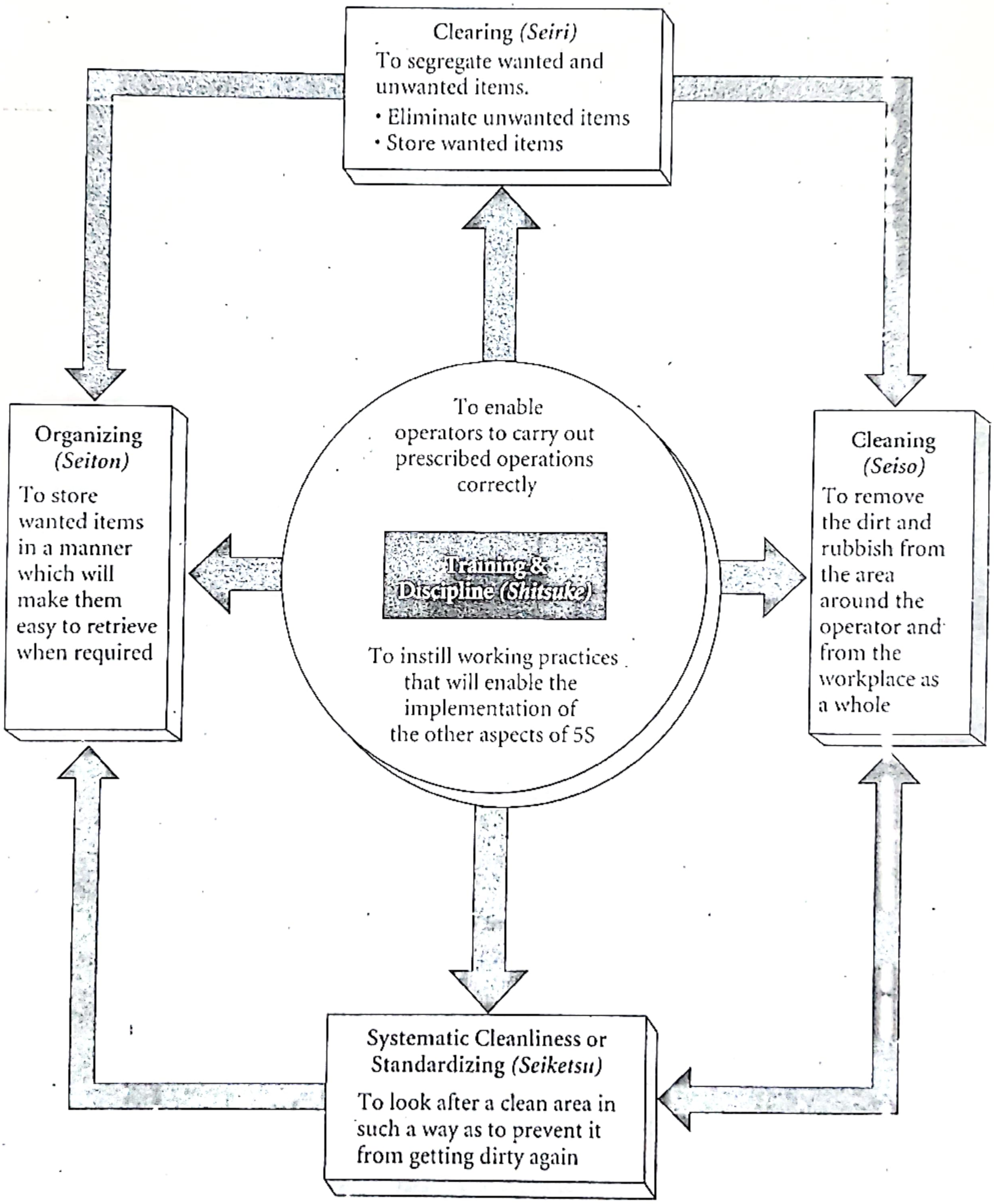
5
4
3
2
1

Remarks: This is the third photograph, and still no change. Something has got to be done and quickly.

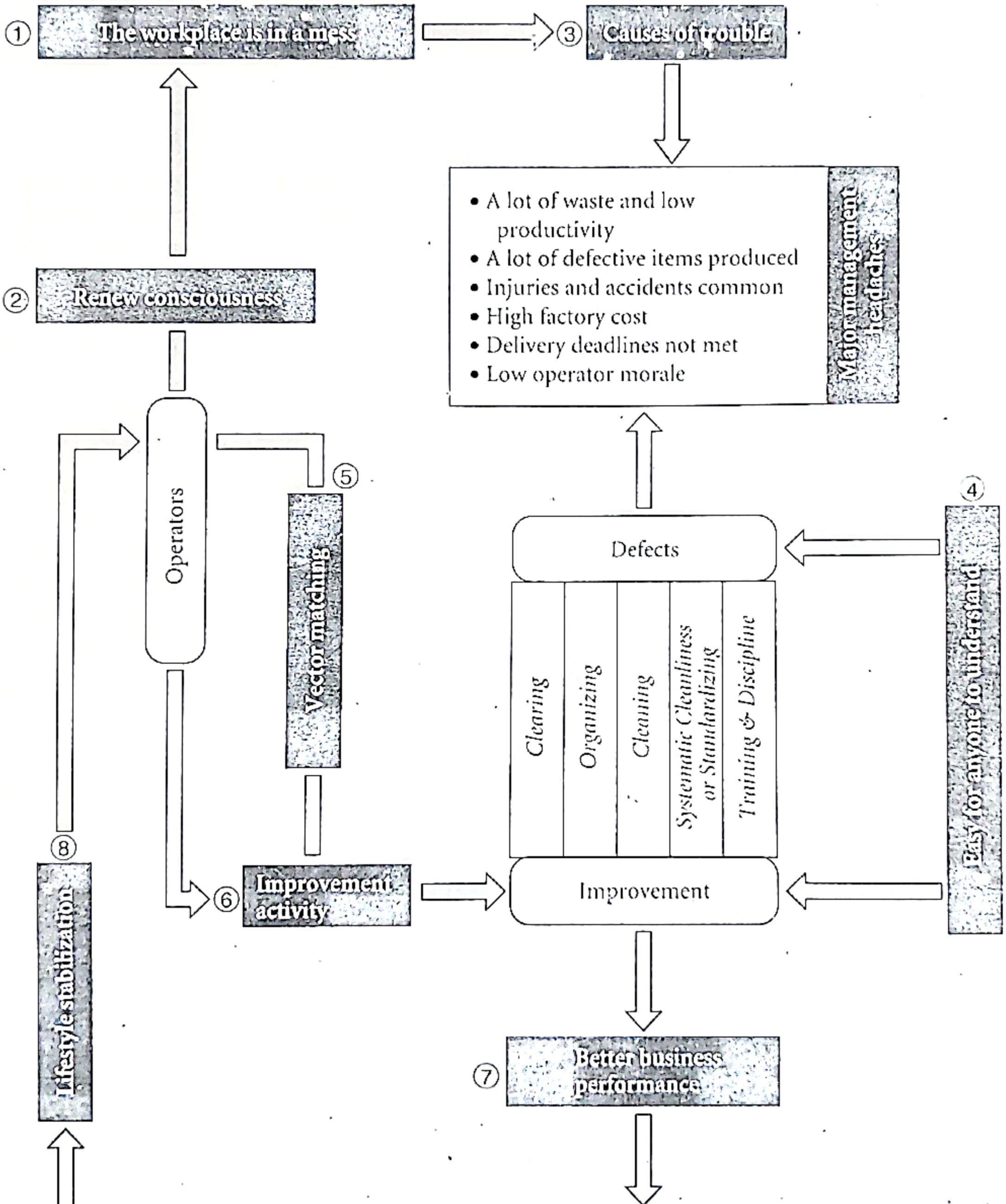
Evaluation

5S Definitions

The following diagram encapsulates the author's approach to 5S



Cause-Effect Relationship Within 5S



Postscript

FOR SEVERAL YEARS I have been consumed with a passion for disseminating the fixed-position photographic approach. Although I am convinced of its utility in the workplace, my words alone cannot demonstrate its effectiveness. Thus, I am very grateful to those who appreciated the potential of the method, put it into practice, and kindly consented to allow their photographic records be compiled into a book that would provide concrete proof of the efficacy of the approach. Planning for this book began in June and by August a huge number of photographs were sent to me. The response was more enthusiastic than I dared hope and demonstrates just how powerful the fixed-position photographic method is in actual practice.

Yet, this book has only scratched the surface—it is only the preliminary report on the kinds of results obtainable by use of the fixed-position photographic method. I sincerely hope that this book will be only the first of many collections of outstanding examples of improved efficiency and safety made through the application of 5S techniques.

I would like to take this opportunity to express my gratitude to the companies which kindly provided the photographic that form the backbone of this book.

Also I would like to give special thanks to Kazuya Uchiyama of the Publication & Information Division of the JMA Management Center and the illustrator Nobuaki Iketani for their invaluable assistance in completing this project.

—*T.S.*

About the Author

TOMOO SUGIYAMA entered Nippon Gakki in 1935 and was appointed chief of efficiency section in 1952. In 1955 when Yamaha Motor Co., Ltd. was founded, he became chief of the production section. After serving as executive director for Showa Plant and as representative director for Kitagawa Automobile Industries, he was appointed to the Board of Directors of Yamaha Motor. He retired from the company in 1982, and is now active as a full-time lecturer at the Management School of the Japan Management Association (JMA) and as a factory management consultant. His books include *Yamaha Hatsudoki no genba kaizen hassoho* [The Approach to Shopfloor Improvements at Yamaha Motor], *Kaizen hasso no sodatekata* [How to Elicit Ideas for Improvement], and *Konna yarikataino aru genba kaizen no susumekata* (published in English as *The Improvement Book*).

Fixed-Position Photographic Record

Shop Name _____

Course / Location	1st STAGE	2nd STAGE	3rd STAGE	4th STAGE
	Identify your own shortcomings – In your workplace – ● things you would prefer others not see ● areas that have not been cleared away properly ● areas that are not easy to clean ● dirty areas ● areas that look unsafe, etc. Month / Day / Person in Charge	Carry out fixed-position photography ● with the same camera ● from the same position ● focus on the same point Month / Day / Person in Charge	Carry out fixed-position photography ● with the same camera ● from the same position ● focus on the same point Month / Day / Person in Charge	Carry out fixed-position photography ● with the same camera ● from the same position ● focus on the same point Month / Day / Person in Charge
Evaluation	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Remarks				
	Month / Day / Person in Charge	Month / Day / Person in Charge	Month / Day / Person in Charge	Month / Day / Person in Charge
Evaluation	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Remarks				
	Month / Day / Person in Charge	Month / Day / Person in Charge	Month / Day / Person in Charge	Month / Day / Person in Charge
Evaluation	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Fixed-Position Photographic Record

Shop Name _____

Course / Location	1st STAGE	2nd STAGE	3rd STAGE	4th STAGE
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Evaluation	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Remarks				
	Month / Day → Person in Charge	Month / Day → Person in Charge	Month / Day → Person in Charge	Month / Day → Person in Charge
Evaluation	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Remarks				
	Month / Day → Person in Charge	Month / Day → Person in Charge	Month / Day → Person in Charge	Month / Day → Person in Charge
Evaluation	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Remarks				
	Month / Day → Person in Charge	Month / Day → Person in Charge	Month / Day → Person in Charge	Month / Day → Person in Charge
Evaluation	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Remarks				
	Month / Day → Person in Charge	Month / Day → Person in Charge	Month / Day → Person in Charge	Month / Day → Person in Charge
Evaluation	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Remarks	Average Score	Average Score	Average Score	Average Score

Notes: You can get effective result when you continue photographing with prenotice given for the date on each stage.

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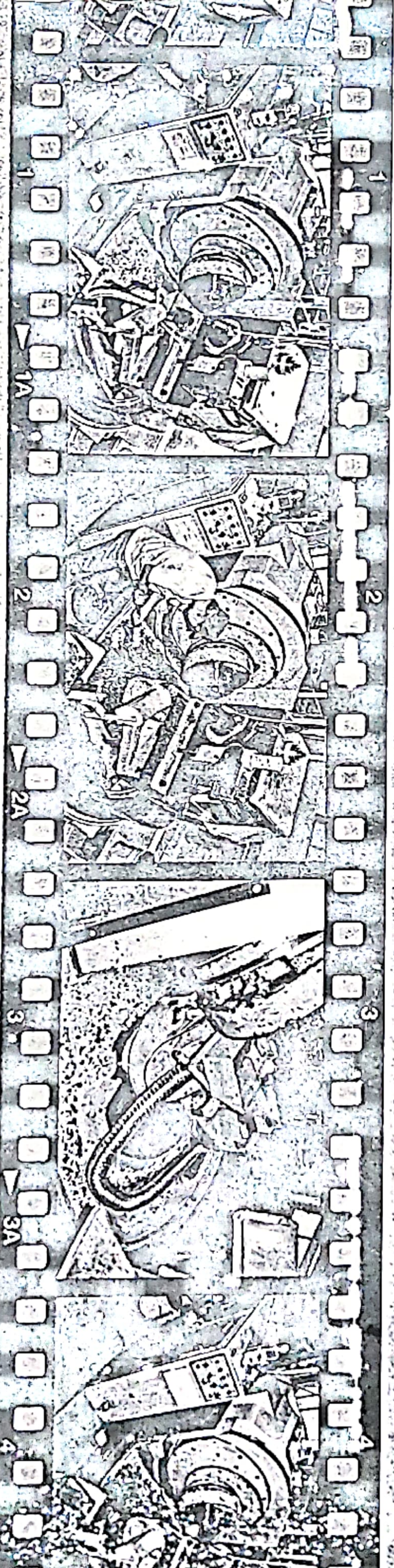

Why "Fixed-Position Photography"?

If we are to make a real success of the 5S improvement and small group activities, we must first familiarize ourselves with shopfloor developments and identify the problems that need to be tackled.

The fixed-position photographic approach is used primarily in areas that have been targeted for 5S and similar improvement activities. It involves photographing each area at regular intervals from the same fixed position. The resulting photos are used to record the sorts of changes that are taking place in the selected area over a set period of time.

Features of the "Fixed-Position Photographic Approach"

- It can be used effectively to record and examine a variety of activities including 5S, safety, small group and shopfloor improvement activities.
- It is quick and easy to learn.
- It can be operated as part of a monthly PLAN-DO-CHECK-ACT cycle.
- It stimulates enthusiastic participation amongst group members.
- It gives group members the opportunity to identify the problem areas themselves providing them with personal involvement in the search for solutions.

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